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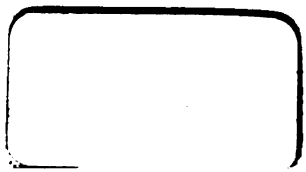

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GROUPS OF CASES ILLUSTRATING THE
FUNDAMENTAL PROBLEMS WHICH
ARISE IN OBSTETRICS

BY
ROBERT L. DeNORMANDIE, A.B., M.D., F.A.C.S.
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Department of the Boston Dispensary

SECOND EDITION

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To

FRANKLIN S. NEWELL, M.D.

Assistant Professor of Obstetrics and Gynecology
Harvard Medical School

AN ABLE OBSTETRICIAN AND A TRUE FRIEND
THIS BOOK IS DEDICATED

PREFACE

WHEN a student in the Harvard Medical School, some of the most valuable teaching that I received in Obstetrics was from the conferences which were then held, based on the clinical reports of cases. At that time I was firmly convinced of the value of such teaching.

The cases here recorded are all actual ones which have occurred in my private or hospital work. The technique advised in the cases is that which any conscientious physician can carry out if he wishes.

If a study of these cases stimulates even a few physicians to seek a higher standard in their obstetric work this book will not have been written in vain.

ROBERT L. DENORMANDIE

357 MARLBOROUGH STREET

PREFACE TO SECOND EDITION

In this second edition I have made corrections throughout the book to clarify the meaning of the text. Some of the sections have been materially altered, namely Section IX, on Accidental Hemorrhage of Pregnancy; Section XVI, on Sepsis; Section XVIII, on Pyelitis in Pregnancy; Section XXI, on Scopolamine Morphine Anæsthesia.

A few words have been added about the use of nitrous oxide in obstetrics and various notes on the further history of some of the cases cited have been added.

The very friendly and honest criticisms that the reviewers throughout the country have made of the book have been very gratifying and the fact that the first printing has been sold leads me to feel that the book has at least a slight place among the obstetric works of to-day.

ROBERT L. DENORMANDIE

355 MARLBOROUGH STREET,
Boston, Massachusetts.

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SECTION I.

DIAGNOSIS OF PREGNANCY.

Case 1. Patient presents herself at the office August 23rd with the question of pregnancy. The history that she gives is that her last menstruation began on June 14th. It was normal in amount and character, with the exception that one day she had severe pain, which for her was unusual. That day she rested quietly in her room and the next day got up and was about as usual. Her May period was normal. There was no July period and up to the present time there has been no period in August. Her menstruation began when thirteen years of age. She flows regularly every twenty-eight days for five days, using three napkins a day for the first three days and then one each day. On July 22nd she first noticed that she had very slight nausea. From then, until the first of August she has been nauseated frequently sometimes in the morning and sometimes in the afternoon or evening. Since the first of August she has not been nauseated at all, but has noticed that if her husband is smoking and the room is at all close the smoke nauseates her. She says she is rather languid and inclined to sleep. She gets up at night to pass her water once, and during the day she passes it five or six times when previously she passed it only three times during the day and not at all during the night. Bowels are regular without medicine. For the last few days she has noticed that there has been some tingling in the breasts, especially about the nipples.

VAGINAL EXAMINATION: — No increased blueness of the introitus. Slight increase in the amount of secretion. Cervix feels soft and is of conical shape. The uterus is slightly anteflexed and there is a distinct softening at the junction of the cervix with the body of the uterus. The uterus is definitely enlarged. The whole uterus seems to be about the size of an orange.

EXAMINATION OF THE BREASTS: — They are very firm, veins are prominent and the glands of Montgomery are distinctly enlarged. When her attention is called to the areola she says she is quite sure it is much larger and darker than it has ever been before.

Diagnosis: Pregnancy is probable.

She was told to go on the principle that she was pregnant, and I went over with her the care that she should take of herself during pregnancy. She is to report again in a month's time when a definite diagnosis can readily be made. If her dates are right labor should be due March twenty-first to twenty-eighth.

October 5. She writes to-day asking if she can take an automobile trip through the White Mountains and that she is feeling very well. She is quite positive that she is pregnant because her breasts are rapidly enlarging and she is increasing in weight and no period has returned. She was not allowed to go on the automobile trip.

Further history of this patient is that she was pregnant at the time seen and she came into labor and was delivered March 26th.

Case 2. QUESTION OF EXTRA-UTERINE PREGNANCY. June 14. Patient presents herself at the office to-day with the following story: — She wants to know if she is pregnant. Her last child, which was the second, was born thirteen months ago. She nursed this child for nine months. Menstruation returned seven months after the birth of this child. Since then menstruation has been regular, every twenty-eight days. She uses from six to eight napkins in all. Her last menstruation was on April 29, one week late. There was no period in May. She is doubtful about this pregnancy because she says that she has worn a pessary, because of a retroverted uterus, since the first child was born, that she did not conceive the second time until the pessary was removed, and that now at no time has the pessary been removed. Another reason why she doubts pregnancy is that in her two previous pregnancies by this time, six weeks, she was in bed with nausea and vomiting and now she has but very slight nausea and no vomiting.

She thinks she is pregnant because she has the longings for the queer things to eat and a definite aversion to certain other things which she had in her previous pregnancies. She now has marked hunger between her meals with a sense of emptiness. In May, when her period should have come, she remembers having had definite prickling sensations in her breasts. Her bowels are regular with medicine. There is no change in micturition.

At two different intervals in the past six weeks she has noticed that she has had severe sharp pain on the right side, so severe that she had to sit down for a few moments. She did not faint and there was no nausea accompanying the pain. For five years, up to five years ago, she says that she had this right-sided pain and the doctor, who was then looking after her, told her the pain was due to an enlarged ovary. Several times she says that the tenderness has been so great that she could not bear the pressure of her clothes and had to go to bed because of it.

VAGINAL EXAMINATION: — The pessary was removed. There is no blueness of the introitus. The cervix has a slight bilateral tear and feels soft. The uterus is slightly but

distinctly enlarged and there is definite softening present between the cervix and the body of the uterus. The lateral culs-de-sac give a sensation of slight fullness in the neighborhood of the uterus. The uterus is in normal position. On her left nothing is felt. On her right is a mass the size of a pullet's egg which when palpated is distinctly tender. It is firm and non-resilient. Inspection of the cervix shows no erosion present.

Diagnosis: Pregnancy is probably present. An extra-uterine pregnancy must be considered, but the probability is that there is a normal pregnancy with an enlarged right ovary.

In previous vaginal examinations upon this patient I had never felt this right-sided mass although I knew she had had previous pain on that side. The patient was planning to go away to her summer home some fifty miles from any surgical help and the question at once arose whether to allow her to go. I was unwilling to accept the responsibility of allowing her to go without a consultation for which I immediately asked. My consultant saw her at once. His findings corresponded with mine except that he was more positive than I that the pregnancy was intra-uterine and not extra-uterine. He put more stress on her past history and the fact that she was known to have had for five years an ovary which at times had bothered her considerably. We agreed to let her go to her summer home and I gave her the names of several surgeons for whom she could send in any emergency. I then told her she should be examined the first week in July.

July 2. Although the nausea is marked it is not as bad as in the other two pregnancies. It is especially distressing after her evening meal and she then goes to bed. She has not had the slightest discomfort on the right side. Is feeling on the whole remarkably well. Vaginal examination shows that the uterus has distinctly enlarged since the previous examination. It now corresponds to a two-month's pregnancy. Normal in position. Nothing is felt on the left side. On very careful examination of the right side I can-

not make out any mass and there is absolutely no tenderness.

I then told her there was no question in my mind that the pregnancy was intra-uterine and not to think any more about the possibility of an extra-uterine.

Case 3. ERROR IN DIAGNOSIS. November 2. Patient presents herself at the office to-day with the following story: — She has been told by a physician that she is pregnant. She is twenty-two years of age, and has been married sixteen months. Menstruation began when she was twelve years old. It comes every twenty-eight days and lasts for four days, and she uses in all ten napkins. She has no pains with the periods. She had a normal period July 10th. On August 20th she began to flow with severe pain and many clots. After two days of pain the excessive flowing stopped and at the end of five days all flowing had ceased. She stayed five days in bed at this time and she was told by the physician who then had charge of her that she had had a miscarriage. This physician made no vaginal examination. From August 25th until October 6th she had no flow. On that day she had a slight flow, dark brownish-red in color, on the next day it was a little more marked. She had very slight pain in the lower abdomen. Her own physician at that time put her to bed, told her she was pregnant and got a nurse for her. She was kept in bed from the sixth to the twenty-first of October with a nurse in attendance. Since October eighth, she has had no pains and no sign of any flow. She has been nauseated several times. Her bowels are regular with medicine. There is no increase in micturition. Since October twenty-first she has been going about her house very slowly and carefully. As long as the diagnosis of pregnancy was definitely made by her own physician and as she is just getting about from a threatened miscarriage I decided not to examine her. She now considers herself about eight weeks pregnant.

November 8. Telephone from the patient that she had a very slight show this morning which made a stain on her underclothes about the size of a fifty-cent piece. She was not having any pains. I told her to go to bed and went at once to her. When I saw her she said she was having a few pains, that she wanted to do everything she possibly could to avoid a miscarriage. I gave her one-eighth grain of morphia subcutaneously at once and told her if the pains did not cease in an hour's time to take the tablet (morphia

gr. 1/8) which I left her. I immediately got a nurse for her and told her she must stay in bed absolutely. I did not examine her at this time. This evening about eight, pains returned and the morphia was repeated. At ten they were still present but less, and as she was very restless she was given another 1/8 grain subcutaneously.

November 9. Morphia which she had last night made her more or less delirious, but she has had no pain since ten last evening. Temperature normal. Pulse 62. No tenderness over the abdomen. The fundus cannot be palpated. At the present time there is no flowing, but last night at five o'clock one pad was stained through with bright red blood. No clots. The next napkin had less stain and was darker in color. There has been absolutely no staining since nine this morning. She dates her pregnancy from about August 27th, and if this is so she would be about ten weeks pregnant. Examination of the breasts shows that the breasts are not enlarged, are soft and not firm. There is no enlargement of the glands of Montgomery.

There is no indication for treatment except to keep the patient in bed on a light diet.

November 13. Vaginal examination shows the uterus in third degree retroversion. Cervix is not softened. There is no enlargement on the sides but the whole uterus gives the impression of being slightly enlarged. The rest of the pelvic examination is not remarkable.

The uterus is not enlarged to correspond to her supposed dates. If she is pregnant, it is not for more than a few weeks at most.

Patient was put in the knee-chest position and I tried to replace the uterus but with the amount of manipulation that I felt justified in using could get it out of the posterior cul-de-sac, up only into second degree retroversion. I could not get the fundus forward. She is to get up to-morrow and go about slowly. There is to be no intercourse and she was forbidden to go out in the automobile.

November 28. Since last note patient has been up and about the house. There has been no flowing and no pain. Vaginal examination shows the uterus in second degree ret-

roversion. There is absolutely no tenderness in the pelvis. Cervix is slightly soft. I can make out no increase in the enlargement of the uterus from the last note and to-day there is a question in my mind whether she is pregnant at all. I suggested to her an ether examination but she is very apprehensive about taking ether and refused. She is perfectly willing to go on in doubt for a time longer.

December 5. Telephone from the patient that there is a slight show this afternoon. All flowing had stopped within an hour after it had begun. I saw her in the late afternoon and it was then seen that she had become very apprehensive about herself. She says she is afraid to go in town and is afraid to get on to the cars and is afraid to stay alone in her home. Careful questioning brought out the fact that she had been having these fears for the past four months and that she had avoided telling me anything about them. She says she is sleeping poorly but that her appetite is good. Since she was married she says she has lost weight. Her best weight was two years ago when she weighed 155. Her usual weight is about 140, but that now she weighs 112.

She is very nervous, unable to sit quietly, constantly getting up and biting her nails. Her talk is very rapid but perfectly coherent. She says this nervousness has all come on since she was married. She recognizes that she must control herself, but she says the fact that she may miscarry stirs her up constantly. She is talking with her friends and relatives of the possibility of miscarrying. Yesterday she had a hysterical attack and it was some hours before she got control of herself.

I told her the important thing was, not that she might miscarry, but that she must overcome this extreme nervousness and put away these fears of which she speaks. The question of pregnancy must not be talked about with anyone. I then questioned her about the frequency of intercourse and she answered "quite often." I did not press this question but asked that her husband come to my office so that I could talk the situation over with him.

December 6. The husband comes to the office to-day and he tells me that she is very much upset by the fact that

I asked him to come in and that she is sure there is "something terrible the matter" with her. I told him very clearly that I thought it wrong to put her to bed because of her mental condition, which had become very much worse in the past three weeks, that it was very much better to let her go about and if she did miscarry to make light of it; that I did not believe she was pregnant now and that if she were, her mental condition was such that this was more important than the pregnancy. Questioning him about intercourse he frankly said that there had been a great excess, and that he now thought this might have something to do with her nervous condition. He agreed to abstain entirely for two months from any intercourse and said he would do all in his power to straighten out the situation at home.

December 12. She has been sleeping better. During the day has had several depressed periods and was very much worried about her general condition. I examined her by vagina to-day in order to settle absolutely about her pregnancy. There is no blueness in the vagina. Uterus is in second degree retroversion. There has been no enlargement since my last note although the uterus seems a little larger than a virgin uterus should be. There is no erosion of the cervix. Examination of the breasts shows that they are soft and are not enlarged in size. Papillæ although prominent are not markedly enlarged. There is no increased color of the areola.

There is no question in my mind that she is not pregnant and that she has not been pregnant. She is disappointed but recognizes that her own mental condition is for the time being more important than any pregnancy.

May 27. Reports at the office to-day and is looking splendidly. Says she is feeling absolutely well. No sensations of depression or fear. The only time she is depressed at all is just before her menstruation, but then only for a few hours and it all passes over quickly. She now weighs 147, which is approximately her normal weight. She is sleeping well, her appetite is excellent. The January period was a little scant. The February period normal in all respects, as were also her March, April and May periods.

Her general condition is satisfactory, and her mental condition is normal. She wants to know now about becoming pregnant and what advice I would give her about the retroverted uterus. I told her that I was unwilling to give her ether and attempt to replace the uterus or to do any major operation until her husband's seminal secretion was examined. She volunteered the remark that she thought her nervousness was due entirely to the excessive amount of intercourse and that now since it had come within normal limits she would be perfectly well.

Up to the present time she has not become pregnant and and her husband would not have his seminal fluid examined.

Case 4. DECIDUAL CAST. Patient is seen for the first time, February 3rd, when she comes to the office saying that she is pregnant. Her last period was December 6th. Absolutely normal in all respects. Lasted four to five days. Period comes every twenty-one to twenty-four days. She had no period in January. This is her second pregnancy. In the seventh week of her first pregnancy she started to flow. At first only a few stains which gradually increased until she used five or six pads a day. All this time she had no pain. Felt absolutely well and with no nausea. She was kept in bed during this flowing. She says it stopped after what corresponded to the third menstrual period. After she stopped flowing she was allowed gradually to get up and about. At that time the physician in charge had several consultations about the advisability of emptying the uterus because of the flow, but it was finally decided to let her go on and pregnancy ended with a normal delivery after a twelve-hour labor. She had three stitches taken in the perineum. The baby weighed eight and a half pounds. She nursed her baby for nine months, five months entirely. After this first baby was born she had considerable bearing down sensation and backache and a year later she had an Alexander operation performed for a retroverted uterus. Since this operation she has been perfectly well.

At the present time she has slight nausea but with no regularity. It may come at any time, morning, noon or night. She has noticed that micturition has increased in frequency and the breasts have occasionally a prickling sensation in them. Her next period is due in a very few days. I warned her about the importance of keeping quiet and doing nothing more than she absolutely had to do at this time in the light of the history of the first pregnancy.

February 4. She telephones that this afternoon about three o'clock she noticed that she had the slightest show which she thought was blood but had no pain. She immediately went to bed. What she showed to me was a leucorrheal stain with not the slightest tinge of blood in it but she said this was exactly the way she started in in her first pregnancy and because she was so apprehensive I

agreed with her that she must stay in bed until this period was over. I sent a nurse out at once.

February 7th at half-past three A.M. patient was awakened by passing a large clot and there was bright red flow. In a very few moments she stained through one pad. Had absolutely no pain. In ten minutes this sudden gush of blood stopped. Pulse 68. From four until eight, when the pads were again changed, she had soaked through entirely the first pad and part of the second. At eight o'clock she passed a small clot and when I saw her again at eleven there was still a slight amount of bright red flowing. In the afternoon the flow became less bright and less in amount. She has no temperature and pulse is 72.

February 9. Yesterday there was very slight amount of flow, not staining through one napkin. This afternoon the nurse telephoned that the patient passed without pain something that looked like a membrane. The specimen was evidently a cast of the uterus. It was put in alcohol and taken at once to a pathologist.

VAGINAL EXAMINATION: — The uterus corresponds in size to a two months pregnancy. The fundus of the uterus is anterior. Nothing on the left is palpable. On the right running from the side of the uterus forward to the right inguinal canal is a small round tube which gives the impression that it might be a round ligament put on stretch following her Alexander operation. I could not make out anything on either side of the pelvis but the fact that she had passed this membranous cast made me suspicious of an extra-uterine pregnancy. After the cast was passed there was absolutely no flow. I asked for a consultation with the surgeon who had done the Alexander operation because I knew that if she were to have another operation she would want him to operate. At this time he was out of town for three or four days. The only treatment now indicated was to keep the patient quiet in bed and await developments.

February 12. Report from the pathologist says that the specimen sent consisted of a membranous sheet from the uterus. "Microscopic examination showed it to be com-

posed of decidual cells and nowhere was there any chorionic villi. Diagnosis, decidua of pregnancy, extra-uterine (?)."

February 14. There has been no flowing and no pain since the cast was passed. The consultant saw the patient to-day. His questioning brought out no new points. He found the uterus to be in third degree of retroversion, and he very readily replaced it. At this time he noticed that there was a band running off from the uterus on the left side as well as from the right. He could find nothing abnormal outside the uterus. He considered that she was two months advanced in a normal pregnancy. On talking the situation over we both brought forward the possibility that she might have a bicornate uterus and that one side had miscarried while in the other pregnancy was advancing.

February 16. There has been no flow now for one week. She is to get up out of bed for an hour to-day and very slowly to get about again. On February 24th she went downstairs with no untoward effect.

February 28. Examination to-day shows the uterus in third degree retroversion. Cervix is close to the symphysis. Nothing felt on the sides. There is no tenderness in the pelvis, except when I attempted to replace the uterus. Uterus is still larger than normal though there is no increase in size since my last examination. She is going about doing more and more. Her general condition is satisfactory.

March 2. Patient telephones to-night that she is having a very slight flow, that she had sent for the nurse and that she had gone to bed of her own accord. There is absolutely no pain and no clots have been passed.

March 3. Absolutely comfortable. No pain. Flow which came last evening was very dark in color. Now has become bright red without any pain and without clots. She feels as if she were having a menstrual period as she is having pain in her hips which she says she usually does have at the beginning of her menstruation. To-day she stained through two napkins.

March 4. Flow becomes distinctly less. At no time has she had any pain.

March 6. Flow stopped yesterday. To-day she got up

and there is no flow and no pain. She was told to go about her house and gradually to get back to her regular routine.

March 22. VAGINAL EXAMINATION: — There is no blueness of the introitus. Cervix slightly softened. Uterus in third degree retroversion. It is but very slightly enlarged. It can in no way be regarded as the size of a three months pregnancy. There is nothing palpable on either side.

As she is certain that she is three months pregnant or not at all, I told her to get up and go around as if she were not pregnant. There is a possibility that she may have some retained products of conception but if she does not flow irregularly I advised against her being curetted. If she began to flow irregularly in any way I told her that she would have to be curetted.

April 6. She began to menstruate shortly after my examination on March 22nd. A normal period, as far as she can determine. Comes in to-day in order to have the uterus replaced and to try wearing a pessary. Cervix is felt just below the symphysis. Uterus is in third degree retroversion and freely movable. By bimanual manipulation the uterus was raised into normal position. A pessary was placed and this held the uterus in excellent position. Uterus is normal in size.

June 14. Since last note the patient has had two periods. As far as she can determine absolutely normal in character. The pessary is comfortable. She has no backache and no bearing down sensations. The uterus is normal in size and position. There is no vaginal discharge. There are no abrasions in the vagina. Pessary cleaned and replaced.

The patient, since this history was written, became pregnant while wearing the pessary. The pessary was removed when she was three and a half months advanced. Her pregnancy was normal in all respects and she delivered herself, after a short labor, of an eight and three-quarters pound baby.

Summary of Diagnosis of Pregnancy.

The four preceding cases are fairly typical ones showing some of the problems that may arise in the diagnosis of pregnancy.

The history that a patient gives you is always of questionable value depending upon her ability and willingness to give even an approximately correct statement of her symptoms.

The patient's menstrual history from the onset of this phenomenon is important and in every case must be entered into carefully. Slight irregularities in women who have previously always been regular are to be kept in mind and may be the first suggestion to put the diagnosis of extra-uterine pregnancy before the physician. A cessation of menstruation is the first of the presumptive signs of pregnancy and in all of these cases it was present. Slight staining each month during the first few months of pregnancy is not so rare as to be regarded as a sign against pregnancy. It must, however, be regarded as abnormal and the physician must be on his guard for an error in his diagnosis of a normal pregnancy.

The second of these presumptive signs is nausea and vomiting. This is so irregular in all its happenings, that I have come to disregard it almost entirely. In Case 3 it was present, yet the patient was not pregnant. In the other cases it was present at very variable times. One must not get the idea that the nausea and vomiting of pregnancy comes always in the morning. In a majority of cases it probably will come then but in not a small minority it appears at any part of the day except when the patient is sleeping.

The third sign is the change in the number of times the patient desires to micturate. Especially suggestive is the getting up at night when previously she has never had to do so. The pressure of the enlarging uterus on the bladder is the cause; the amount of urine secreted is not necessarily increased. I am inclined to think that a primigravida notices this change more often than does a multigravida.

The fourth sign is the alterations in the breasts. In a

primigravida these changes are of much greater value than in a woman who has previously borne children. The increased firmness, the increase of size, the increase in width and depth of color of the areola all may be noticed by the patient by the fourth week in pregnancy. But the amount of change is most variable and not such that a positive diagnosis can be made. The veins are apt to stand out very prominently as in Case 1. Tingling or prickling sensations in the breasts, especially at the time of the first passed period, are very suggestive. When an illegitimate pregnancy is suspected one can oftentimes obtain an admission of these sensations because the patient does not connect the breasts with her pregnancy. A certain small percentage of women have indefinite sensations in their breasts at each menstrual wave and in these women manifestly this sign becomes of less value.

The fifth sign, changes in the mental condition of the patient, is, when present, of much aid, especially when the patient is known to you beforehand. Patients may show irritability, depression, or exhilaration. As they are in one pregnancy they are very apt to be in the following. Whether to regard the cravings, the perverted appetites, that come so often in pregnancy as a mental or digestive phenomenon is uncertain. This condition was definitely present in Case 2. In Case 1 the odor of tobacco smoke nauseated the patient and it had never done so before. These signs all go to show how unstable a woman may be during a pregnancy. They are all important to note in making a diagnosis of pregnancy. Stress is not to be put upon them because they all come from the patient and if she has anything to hide they become of no value. If the patient is anxious for children, as in Case 3, her desires color her story and make it also of no value.

These presumptive or better called subjective signs of pregnancy are on the whole of little real value in making an absolute diagnosis of pregnancy and should never be relied upon. When the patient is an intelligent woman, as she was in Case 2, and has nothing to hide, nothing to desire, the history obtained is often of great help.

The objective or probable signs of pregnancy are determined by the physician and it is upon these in the early months that the diagnosis must be based.

The first is the enlargement of the uterus as determined by vaginal examination. How early a physician can make a diagnosis of an enlarged uterus depends entirely upon his ability and whether the patient has a thin relaxed abdominal wall.

From the sixth to the eighth week a careful examination will usually give Hegar's sign, *i.e.*, the softening between the tissues of the cervix and the fundus combined with the ballooning out of the sides of the uterus as shown in the lateral culs-de-sac. Combined with the enlargement of the uterus is the softening of the cervix. This softening when there is no endocervicitis present is very characteristic, especially in a primigravida. It is less marked in a multigravida. In order to rule out any endocervicitis the cervix must be inspected. Hegar's sign was definitely made out in two of these cases and the softening of the cervix was noted.

The second objective sign is the change in the breast tissue. Before one can appreciate the changes which take place in a pregnancy one must know the breast, its shape, its consistency, the areola, of the non-pregnant woman. In Case I the breasts were typical and combined with the other signs made the diagnosis relatively simple. In the early weeks of pregnancy it is very seldom that secretion can be expressed from the nipples in a primigravida. In a multigravida this sign is of little or no value.

These two signs, the enlarged uterus and the changes in the breasts, are the earliest signs upon which a diagnosis can be based. The enlargement of the abdomen, and the intermittent contractions of the uterus, are not apparent in the first two months of pregnancy. The increased vaginal secretion may occur but it is of no diagnostic import and the same may be said of the blueness of the introitus.

Abderhalden's serum reaction for the diagnosis of pregnancy may eventually be so simplified as to be more available than it is at the present time. Excellent results from many writers are being reported, but for the general practitioner,

unless he has access to a well equipped laboratory, it is out of the question. Moreover there are relatively few cases where it is essential that a diagnosis be made at once, or where it is not possible to wait a few weeks so that the diagnosis can be certain. Extra-uterine pregnancy demands an early and correct diagnosis and if by this reaction the presence or absence of a pregnancy can be accurately determined, then the treatment of the case becomes much simplified.

The interpretation of the positive signs of pregnancy all depends upon the training and ability of the physician. There is no more humiliating mistake than to err in a diagnosis of pregnancy. The grouping of the subjective and objective signs must be done without prejudice remembering that no matter in what station of life the patient is, pregnancy is possible.

SECTION II.

MISCARRIAGE.

Case 5. INEVITABLE ABORTION. Patient is seen for the first time June 13. Her last menstruation was April 23. It was a normal period lasting five days. She skipped her May period. The March period was perfectly normal. She considers herself in the second month of her second pregnancy. This morning on getting out of bed she noticed that there was a slight pinkish show. There has been no pain. She is a very active athletic woman playing much tennis and golf. Yesterday she played several sets of tennis and got very tired. She has fainted once since she was pregnant, but as this is a very common thing for her she thought nothing of it. Last night she had a sharp pain in her right side which lasted a few moments and then passed off. She says she also had this pain three days ago. She has not vomited, but is nauseated. Her pulse is 62 and temperature normal.

Abdominal examination shows scaphoid abdomen. Tympanitic throughout. Slight tenderness on deep pressure on the right side low down in the pelvis. No spasm present. Otherwise the abdominal examination is negative.

VAGINAL EXAMINATION: — On the napkin there is slight stain, pink in color. The cervix is soft, not dilated. The fundus of the uterus is drawn slightly to the right side. It is slightly enlarged. There is a suggestion of Hegar's sign. There is nothing in the posterior cul-de-sac. Nothing abnormal is felt on the sides. There is no tenderness in the pelvis. While talking with her she said she began to feel slight pains as if she were going to menstruate.

Diagnosis: Threatened miscarriage.

Treatment: Bed, absolutely; simple diet, morphia and a nurse. She telephones at one P.M. that she has begun to flow profusely. I went to her at once and learned that just

after she telephoned she had two severe pains and then passed something by the vagina. Her first impulse was to burn it up which she did. She now is flowing slightly, of a bright red color and the blood clots very quickly. Her pulse is 80. At no time since she passed the mass has she had any pains. During the afternoon up to six o'clock she stained through two napkins with bright red blood. She was having no pain. Pulse 70. Temperature 99°.

June 14. From ten o'clock last night until eight this morning there was no flow. She slept all night. Pulse 70, temperature 98.6°. At noon she passed a small clot and began to flow so that she stained through one napkin in two hours. During the afternoon the nurse reports that she is having a few indefinite pains and passed a clot of blood about two inches long by one inch broad. Diagnosis now changed to an incomplete miscarriage and I advised that she be curetted in the morning.

June 15. She was prepared and etherized. A careful pelvic examination revealed nothing on the sides. The uterus is enlarged to the size of a two months pregnancy and is soft. The external os is soft and admits one finger. The cervix was dilated carefully by a Goodell dilator and a large sized blunt curette then passed into the uterus. Much blood clot and considerable decidual tissue were removed. The uterus was then curetted carefully and lightly with a sharp small curette, and the cavity of the uterus wiped out with gauze sponge soaked in 70% alcohol. The uterus shut down at once and there was no bleeding. A sterile pad was put on and patient put back in bed.

June 18. She has made an excellent recovery. There now is but a very slight discharge present. Temperature normal. Pulse 62.

The patient got up out of bed on the sixth day after curettage and two weeks later examination showed the uterus to be normal in size and position. Nothing felt on the sides. No tenderness anywhere in the pelvis. There is no vaginal discharge. Menstruation returned in August and since that time has been regular and with the same characteristics as before the curettage.

Case 6. THREATENED ABORTION. November 5. A telephone message was received from a physician saying that he had just seen a patient of mine who was miscarrying. He said she was at a neighbor's house when without warning she had a sudden gush of blood from the vagina and was flooded.

The patient was out of town and as soon as possible I saw her. I found her in bed and obtained from her the following story: — She had walked over from her home, a distance of only about a hundred yards, when without warning she felt herself flooded. She at once was put to bed at her neighbor's. She now is having pains every ten minutes, not severe, a little more marked than at her menstrual periods. She was given at once an eighth of morphia subcutaneously. Her underclothes were covered with blood. Shortly after she was put to bed the flowing decreased in amount and when I arrived three hours after the first gush I found no flowing. Her last menstruation, which was on August 18th, was normal in amount and in character. She flows every twenty-six days and she has never skipped a period except when she is pregnant. Her first baby was born twenty months ago. Her pulse was 70 and temperature 98.4°. The pains grew less marked but at the end of an hour were still present and I repeated the morphia. From then to six o'clock she stained through one napkin. At half past five she was not having any pains. She insisted, not unreasonably, on going home. She was given another eighth of morphia by mouth and at six o'clock was carried across to her own home. Because of the expense and because she rather wanted to miscarry she refused to have a nurse but she did agree to stay in bed until I saw her the next day. Telephone message from her husband at eight P.M. saying there was but slight flow and no clots had appeared. He was then told to give his wife another tablet of morphia gr. 1/8 at ten and to repeat it at two in the morning.

November 6. From ten last night until seven this morning she used but one pad. On this pad she found one dark-red clot the size of a hen's egg. She slept all night and did not have the morphia at two. This morning she was having a few fleeting pains and was told to take a tablet of

morphia every four hours. The patient telephones in the evening saying that she had used but one pad and that was not soaked through. Has had no pains. Against my order she got up three times during the day to go to the bathroom.

November 7. Husband telephones this evening that his wife will not stay in bed, partly, because she does not care whether she miscarries and partly because of trouble with her servants; that she now is not flowing and has no pain. Morphia which she had been having every four hours was now stopped.

November 8. This morning husband telephones that she was "flowing badly with clots" and that she was having pains "every little while." He frankly said it was impossible to keep her in bed. I decided then from this story to curette her in the afternoon.

Vaginal examination this afternoon showed a uterus symmetrically enlarged to the size of a grape-fruit. Os uteri not dilated and cervix no softer than normal, no blood on the examining finger. No tenderness on the sides. Temperature normal and pulse 68. The patient said there had been no flowing since morning. I flatly refused to curette her and left the nurse whom I took out with me, on the case, with orders to keep the patient absolutely in bed.

November 10. There has been no flowing now for forty-eight hours and the patient has stayed in bed up to this evening. The nurse has had fair control over her but she leaves to-night.

November 14. There has been no flowing and she has had no pains since the last note. She has consented to stay in bed for breakfast and not to come downstairs until lunch time for one week.

November 28. Telephone to-day from the husband saying his wife had been flowing for two days but would not say anything about it to me. I saw her this afternoon and she looks well. Pulse 70 and temperature normal. She says a week ago she had severe intermittent pain which lasted for two hours and was accompanied by flowing, bright red in color. The flowing ceased in three or four hours and she said nothing about it. Until yesterday she had no

more flowing. It is impossible to find out accurately how much flow she had yesterday. She had no pain. To-day she is flowing less she says than yesterday. The pad which she has had on for four or five hours is well soaked through with bright red stain.

Vaginal examination to-day shows the os uteri tight. The uterus is distinctly larger than at the previous examination. I told her I would not curette her, that any such procedure would be nothing short of criminal and that if she became seriously sick the blame was hers, not mine, and I also wrote to the husband telling him where the responsibility lay.

December 5. The husband reports to-day at the office that there has been no flowing since the last examination. He says his wife is feeling much better and he thinks she is trying to keep very quiet. I asked him whether intercourse could be the cause of this continued bleeding but he denied it as had the wife some weeks previously.

From now on her pregnancy advanced without incident and she was delivered of a healthy but small baby three weeks ahead of the reckoned date.

Case 7. RETROVERTED INCARCERATED PREGNANT UTERUS. BLIGHTED OVUM. Patient comes to the office February 13th. She has always been perfectly well. Her first child by her first husband was born thirteen years ago. Normal delivery. Last normal menstruation was December 12. It lasted three to four days and was normal in all its characteristics. The present pregnancy is not remarkable except that she is very constipated. Bowels not moving oftener than once in four days. She has taken castor oil occasionally for the past two weeks. She drinks but one glass of water a day. Is doing the usual things which she does when she is not pregnant. Her bowels now had not moved for three days. I told her she should be examined at once but she refused. I went over with her the care that she should take of herself during her pregnancy, and told her this evening when she was ready to retire to take an oil enema of four ounces, to retain this over night, also to take as-soon as she got home a half teaspoonful of the fluid extract of cascara sagrada and to repeat this at bedtime. In the morning she was to take a large suds enema while lying on her left side. If she did not get a good result from this treatment I told her to report at once to me. As a routine I advised her to take thirty drops of cascara three times a day; if this proved to be too much to reduce it. It was made clear to her that she must have one movement each day and if she did not have it by noontime she was to take an enema. Her food was regulated and the importance of drinking at least ten glasses of fluid was impressed upon her.

February 23. I heard nothing from her until to-day when her husband telephones that she was passing blood by the vagina. I saw her at once and got from her the following story: — For the first four days after she was at the office with the aid of enemata and cascara she obtained good movements. From then until the 21st of February she had but one movement, and she excused her carelessness because of her many social engagements. On the 21st of February about noon she had a large hard movement with severe pain. She passed some blood, which she said she thought came from the rectum. On the 22nd she had another very

constipated movement and in the afternoon passed a clot without pain. This clot she said came from the vagina. Since then until this morning she has seen no blood.

VAGINAL EXAMINATION: — The rectum is packed with hard ball-like feces, extending upward as far as one could reach. Satisfactory pelvic examination, on account of this packed condition of the rectum, is impossible. She at once took an oil enema, followed four hours later by a glycerine enema of four ounces with water two ounces. Much large, hard, ball-like feces was passed. Another oil enema was carried over night and another glycerine and water enema ordered for the morning. She was to continue her cascara as before ordered.

February 24. This morning she had another large movement.

VAGINAL EXAMINATION: — No blueness of the vagina. Cervix is not softened. Os uteri not dilated. Uterus is in third degree retroversion and slightly enlarged. Non-tender. Nothing felt on the sides. No blood in the vagina. She is to stay in bed to-day, getting up only to go to the bathroom.

February 25. This morning she found a slight dark red stain on her night dress. Bowels are now moving regularly and she is not constipated.

February 26. There is no staining and she is perfectly comfortable. Still in bed.

February 28. Last night she passed a small amount of dark blood and she notices that the stain is especially marked when she has a movement. There is no increase in micturition. Bowels are now constipated. She is flowing very slightly. Breasts are absolutely negative. Areola is not darkened. Glands of Montgomery are not enlarged. Is to report any increase in flowing or any pain. A nurse was sent out to-day, and the patient is to stay in bed absolutely. Bowels are to be moved by cascara with the aid of enemata.

March 1. She has had no pains and no flowing. Bowels move by enema every morning. Is to stay in bed another forty-eight hours before any attempt to replace the uterus is made. She is having no pains.

March 3. She began bleeding this morning at one. At

three she began having pains once an hour with a bright red flow.

VAGINAL EXAMINATION: — Os uteri dilated one finger and the cervix very soft.

Diagnosis: Inevitable miscarriage.

Treatment: In Sims' position and with a large Sims' speculum I packed the cervical canal with sterile gauze and also the vagina under aseptic precautions.

By noon the pains were coming every fifteen minutes and in the evening the pains became very hard and came with increasing severity until one o'clock, the morning of the fourth, when they ceased entirely. From then on she slept.

March 4. This morning the packing was taken out and in the vagina was found an intact ovum. The ovum is small, one and a half inches long by one inch broad. She could not in any way be regarded as three months along in her pregnancy. The probablity is that the ovum was a "blighted" one and that the first bleeding was due to Nature's attempt at that time to throw it off. The patient being kept quiet, the uterus did not expel it.

The patient now made an absolutely normal convalescence and got up on the sixth day. Examination on the eighth day showed no flowing. The uterus is in marked retroversion. There is no tenderness present in the pelvis and nothing felt on either side. All attempts to replace the uterus were absolutely unsuccessful. I then advised that she have ether and an attempt be made to replace the uterus.

March 13. The patient etherized this morning. After much manipulation and with traction on the cervix with a double hook, the uterus was raised into an anterior position. In this position it was seen that the fundus was drawn to the patient's left and the moment the hand on the abdomen was removed the fundus fell backward. It was again brought up into position and after several pessaries were tried one was obtained which seemed to hold the uterus in good position.

March 23. The uterus to-day is found in first degree retroversion and the fundus is drawn to the left. A larger pessary with a sharper curve was put in and the uterus

held in position. Bowels are moving regularly with the aid of cascara.

April 8. Menstruation appeared March 24th and lasted through the 28th. Character no different from previous periods. She complains of feeling a pressure from the pessary low down in the vagina. Examination shows the uterus in second degree retroversion. In the posterior cul-de-sac is a very tender spot. Attempt to replace the uterus causes the patient pain. There is no break in the vaginal mucous membrane. Pessary left out. I then advised her to have a suspension of the uterus done with freeing of the probable adhesions. Up to the present time, she has not seen fit to have any operation performed.

NOTE: — Since the above history was written, this patient had a suspension of the uterus done. Later she again became pregnant. I did not have charge of her during this pregnancy, but I was called upon to deliver her. She had a normal delivery without any vaginal examinations. Soon after delivery she said that her right leg pained her. I did not give this much thought for it was where ergot had been given her intramuscularly. Temperature that night 100°, pulse 90. The next day the pain was much greater. Temperature in the evening 101° and pulse 100. I looked over her leg carefully and found definite edema of the leg and ankle. Distinct tenderness in the groin and lower leg. I went into the history of her pregnancy and found that for ten days before she was delivered she had had in her right leg slight edema and the pain had been so great that it had kept her upstairs. Her leg had been bandaged. Her temperature had not been taken. My diagnosis was an antepartum phlebitis. Her temperature gradually rose until it reached 102.8° with a pulse of 120 on the sixth day after her delivery. From then on her temperature fluctuated from 100° in the morning to 101° at night for five days more when it gradually dropped to normal on the seventeenth day. During this entire febrile time there was nothing on physical examination to account for this temperature except the phlebitis. After the temperature had been normal for one week she was allowed to get up.

Case 8. AUTOMOBILE MISCARRIAGE. A telephone message was received from a physician September 20th, saying his wife was having a threatened miscarriage, ten weeks along in her fourth pregnancy, and that he wanted me to see her at once. I went to her and obtained the following history: — Her last menstruation was from July 1st to 5th. Normal in every respect. There was no August or September period. Pregnancy advanced without incident until September 16th, when she went for an automobile ride of some fifty miles. The chauffeur was careless and the roads were very rough. September 17th she was up and about the house and in the afternoon noticed that there was a very slight stain on her underclothes. Dark brown in color. She had no pain and there were no clots. She told her husband nothing about it. On the 18th about two o'clock in the morning she had very slight irregular pains in the back and lower abdomen, and had again a slight stain of dark blood. Her husband gave her at once one-eighth grain of morphia and repeated it in two hours. On the 18th she stayed in bed all day with but very slight flowing, dark red in color, staining one pad during the day. An occasional small clot was passed. In the evening the flowing was a little brighter in color. On the 19th she got up and went downstairs and did a few things about the house. On the afternoon of the 19th there was a little more flowing and she had a few cramp-like pains at irregular intervals. She did not go to bed until the evening of the 19th. From then on pains became harder and harder and early in the morning of the 20th she passed some "membranous tissue." Her husband was by necessity away from home from the evening of the 19th until seven in the evening of the 20th. He then found her flowing profusely, bright red blood; she stained through one pad in half an hour. He made a vaginal examination and found the cervix plugged with a soft mass. When I saw her there was but little active flowing. She was having a few indefinite, irregular pains. Temperature was normal and pulse 80. Vaginal examination confirmed his findings.

Diagnosis: Inevitable miscarriage, due to an automobile ride.

Treatment: Curettage at once. She was etherized and then prepared. The uterus was found to be about the size of a three months pregnancy. Cervix showed a bilateral tear, admitted a finger and was very soft. Nothing abnormal felt on either side. A large-sized blunt curette was passed into the uterus and a mass of old blood clot and decidua was removed. Even after she was curetted she continued to bleed rapidly and a finger was then introduced into the uterus with counter pressure on the fundus, and at the fundus of the uterus was found a mass of decidual tissue. This was removed by the finger. Uterus was wiped out with sterile gauze soaked in 70% alcohol. The uterus then contracted down hard, and there was no bleeding. She was put back to bed with a pulse of 100, in excellent condition. She made an absolutely normal convalescence; she was out of bed on the eighth day and gradually resumed her usual duties.

Summary of Miscarriage.

One of the first points to decide in the question of a threatening miscarriage is whether the patient, in order to avoid a complete one, can and will do what the physician in charge thinks is necessary to be done. In Case 5 the patient was anxious and willing to do everything, as she was in Case 4, but in Case 6 the patient was neither willing nor able to do what was indicated. If she is unwilling, there are two means of dealing with her, either to withdraw at once from the case, letting it be clearly understood why you do so, or if that is inadvisable for any reason then to write to the husband clearly and forcibly of the risk the patient is taking. Put the responsibility where it clearly belongs and then you will have nothing with which to reproach yourself if the patient becomes seriously ill.

The question of examining a threatened abortion is not readily settled. Absolute rest both of body and mind is the first point to be sought. A vaginal examination unquestionably stirs up many women a great deal; it is more marked in a primigravida than in a multigravida. If there is the slightest suggestion in the history obtained of an extra-uterine pregnancy the patient must be examined at once.

In Case 5 the sharp right-sided pain was suggestive. In Case 4 the passing of the cast of the uterus was most suspicious and called for a careful pelvic examination. The amount of flowing is no contra-indication for such an examination, no matter how much the patient may object. She must be examined and an extra-uterine pregnancy ruled out as certainly as is possible.

In making a vaginal examination the patient should be in the dorsal position with her legs flexed, well on the edge of the bed, clothes off and properly draped, avoiding all unnecessary exposure, but the introitus must be in plain view. The vulva must be washed off with soap and water and then wiped off with boiled water. A sterile glove must be used and in inserting the examining fingers care must be taken not to touch either side but go directly into the vagina. The size and position of the uterus, its consistency, the condition of the os uteri, the presence of a mass on one side of the uterus or the other all must be carefully determined. If there is flowing alone, without pain and no history of pain in the lower abdomen I usually do not examine the patient at once. If the patient is willing to have a nurse, go to bed and do everything that is possible to avoid a miscarriage then do not examine. The point to be determined is, Shall we do more harm to the already damaged uterine contents by an examination or shall we gain some information which will lead us to treat this individual case more intelligently? By delaying your examination you may keep the patient in bed a few days longer; by examining at once you may change a threatening into an inevitable miscarriage. Indiscriminate examinations undoubtedly do harm; delayed examinations when the case is under competent supervision are not harmful but each individual case must be settled from the history and from the signs.

Rest, as I have already said, is the prime requisite in the treatment of threatened abortion. The patient must go to bed and stay there. She must use the bed-pan and she must lie as quietly as possible while she is in bed. No sitting up and no sudden turning over is to be allowed. Explain to the patient what is happening to the uterine

contents and she will help you more intelligently. If the patient is having pain, morphia is the only drug indicated. How large a dose to give will depend entirely upon the amount of pain, upon the size of the patient and her individual susceptibility to morphia. Case 3 showed a definite idiosyncracy to morphia. Three one-eighth grain doses made her delirious. Whenever you give morphia find out whether the patient has this idiosyncracy for it and if she has, go by her history. The first dose of morphia usually should be given subcutaneously. Thereafter it can be given by mouth every four hours or oftener if necessary. Due care must be taken to avoid any excessive use, thereby causing poisoning. After the patient has been kept under morphia for twenty-four hours and she has had no pain the interval can be increased to every eight hours and then gradually to longer intervals until it is entirely dropped. If the patient is not in pain and is flowing but slightly there usually is no indication to give morphia; rest in bed will be sufficient, but if she is apprehensive and unable to keep quiet choose some drug that will give her repose.

After a patient has had a threatened miscarriage the question when to allow her up out of bed is of considerable importance. She ought to be in bed at least one week after all morphia has been stopped and there has been no flow. Then she should get up very slowly, first around her own room and then on her floor and by the end of the second week, if no untoward symptoms have occurred, it will probably be safe to let her go over the stairs. A patient who has had a threatened miscarriage and who has quieted down must keep relatively quiet the remainder of her pregnancy. At the times which would correspond to menstrual periods were she not pregnant, she should be at home absolutely quiet, not necessarily in bed unless the uterus shows itself to be irritable either by a few pains or by marked contractions. If such a condition arises then she ought to go to bed until this period is over and have small doses of morphia.

It is surprising the amount of flowing that can occur and the pregnancy continue in spite of it to a successful

outcome. This was well shown in Case 6. She flowed at intervals for three weeks. The first time it was very marked. This patient had not only flowing but she had pains and the first diagnosis was an inevitable abortion, but examination showed there was no dilatation of the os uteri and the size of the uterus corresponded to the length of her pregnancy. As the case progressed it was seen that the uterus was enlarging and corresponding to the pregnancy. I am inclined to think that physicians as a whole are a little too quick to curette a threatening miscarriage. There is no question that if we delay and then have to curette we lose a certain number of days and no good comes to the patient. If the patient continues to flow and there is no increase in the size of the uterus there is no question but that a curettage is indicated because she must have some products of conception retained. On the other hand, as in Case 4, where the membrane was passed, or in Case 7, where an intact ovum was passed and the flowing immediately stopped, the uterus coming down to normal size, there is no indication to curette. When menstruation becomes established at once and is thereafter perfectly regular with the usual characteristics, curettage is entirely unnecessary, but if there is a constant or irregular dribble of blood-stained discharge, curettage must be done.

In making preparations for a curettage, the patient should be shaved or clipped closely. She is then etherized and placed on the edge of the bed or on the table. In the home the bed is usually used. There must be good light. When etherized, the vulva is scrubbed thoroughly with soap and water, washed off with sterile water or corrosive sublimate solution 1–3000 finishing with 70% alcohol. The vagina is then thoroughly wiped out also with alcohol. The legs are held either by the nurse or by the leg holder. If the ordinary Robb leg holder is used care must be taken to avoid pressure on the patient's neck and in the popliteal spaces, by placing towels around the legs and neck. I have seen more than one patient bitterly complain of the pain from this pressure. If the leg holder is not at hand a twisted sheet can be used with perfect satisfaction. The instruments for

curettage layout are as follows: weighted vaginal speculum, French hook, Goodell dilator, large blunt curette, small sharp curette, long dressing forceps, ovum forceps and a pair of scissors. Gloves, sterile gauze and half a dozen sterile towels must be at hand. Besides these instruments a basin of sterile water or corrosive sublimate 1–3000 and a basin of 70% alcohol must be ready. Before one proceeds to curette a patient a careful pelvic examination should always be made with the patient under ether in order to rule out any complicating condition outside the uterus. The operating field is covered with sterile towels. The vaginal speculum is put in place and the French hook grasps the anterior lip of the cervix. (A single hook should never be used, for in pregnancy the cervix is so soft that the hook pulls out.) If dilatation is sufficient so that the large blunt curette can be immediately inserted into the uterus there is no indication to use the dilator, but if it is not sufficiently dilated then the dilator must be used. It must be used carefully and slowly with its branches placed in turn in different parts of the cervical ring. Dilatation is not to be accomplished with the dilator in one place. But rarely will the Hanks dilators be necessary. After the large blunt curette is used and the detritus is removed, then with the ovum forceps some of the remaining bits can be taken out. Whether one uses for a final curettement a small sharp curette depends entirely upon whether the operator believes in its use. In a pregnant uterus a few weeks along there is no reason why it should not be used if it is used carefully. No matter what the instrument is, if it is used carelessly damage will come; but with a small sharp curette much of the decidua can be removed and no damage be done. After you consider the uterus empty, a piece of gauze, so folded that no shreds will come free, is passed into the uterus, by means of a long pair of dressing forceps, turned gently about and withdrawn. If troublesome bleeding persists and occasionally it is very troublesome and severe, then put a finger in the uterus and sweep it around while the other hand is above the pubes on the fundus of the uterus giving you counter pressure. Usually in such cases one will find a small piece

of decidua attached to the fundus as was found in Case 8 and this is readily removed by the finger. Do not persist in trying to empty the uterus absolutely of all the decidual shreds. If one keeps curetting, some decidua and then the uterine muscle will come away. Of this there is no question, and if the operator does not stop he may be shocked to find a hole curetted through the uterus and the abdominal cavity entered. That is not an unheard of happening and must be kept in mind in every curettage that is done. The uterus must be relatively empty but it is an impossibility to get it absolutely clean. The remaining bits of decidua will come away in the lochial discharges and the patient will make a normal convalescence.

Not infrequently the uterus will not contract well even when you are reasonably certain that it is empty. A small sterile gauze wick packed into the uterus and a subcutaneous injection of ergot will without fail make the uterus act well. If you do not wish to pack the uterus, a hot intra-uterine douche (110°) of sterile water will many times prove satisfactory. I never use, however, in these cases, a douche, much preferring a small pack which is removed in twelve hours. The after care of these cases is simple. The bowels should move each day. The diet after the nausea from the ether is over is the diet the house presents. No medication is indicated unless some unforeseen complication arises. Sterile pads are used to collect the lochia and are changed as often as necessary. The amount of lochia is usually slight, depending upon how far advanced the patient is in the pregnancy.

The length of time in bed varies also for the same reason. A week is usually sufficient for a miscarriage up to four months. However, it is safe to say that a very small percentage of the women who do miscarry up to this period of gestation stay in bed a week. Many women date their period of ill health as beginning from a badly managed miscarriage. After they are out of bed they should slowly resume their normal life. Menstruation is established at varying periods. Each woman is a law unto herself and no honest predictions can be made as to when the periods will

again begin. The question of pregnancy should not be entertained at least for six months.

The causes of miscarriage are varied. For a most complete classification of the causes the reader is referred to that excellent book of Taussig's on the "Prevention and Treatment of Abortion."

Case 8 is typical of one type of miscarriage that physicians as a whole do not recognize, namely, that caused by the automobile. I am confident that the automobile is a potent cause. Carefully used during pregnancy (see page 87) it is a source of pleasure and no harm; recklessly used it causes many miscarriages. The slow onset generally twelve or even twenty-four hours after the damage is done, the dark red, often brown or almost black discharge, with no accompanying pains are all characteristic of this type of miscarriage. The most common causes of miscarriage are syphilis and chronic nephritis. The latter can be ruled out by a physical examination with special care given to examination of the heart and the night and day urines. The Wasserman reaction in competent hands will tell of the absence or presence of syphilis.

SECTION III.

NORMAL PREGNANCY.

Case 9. NORMAL MULTIPAROUS PREGNANCY. LABOR OCCIPUT LEFT ANTERIOR. Patient is seen for the first time January 1st. Her first baby was born twenty-one months ago. It was a breech delivery. The baby weighed seven pounds, twelve ounces, and since birth has done well.

The patient's last menstruation began on September 29, and lasted four days. Her menstruation comes every twenty-eight days, occasionally one to three days early. There was no October period.

She has had practically no nausea, but for the past two months upon awakening has had an annoying frontal headache, which wears off toward noontime. Occasionally she has very acid eructations, and for this she takes milk of magnesia with immediate relief. Her appetite is excellent. Bowels are regular without medicine. She passes her urine now five or six times a day and gets up out of bed to void twice at night. She is drinking three cups of tea, two cups of coffee, and two to three glasses of water a day. Were it not for the morning headaches she would feel very well. She wears glasses for reading and sewing. She has not had her eyes examined for over a year. For the past month her sleep has been disturbed by the first child who has been sick, and she has had considerable mental worry because of domestic difficulties.

Examination of a specimen passed in the office showed no albumin to be present and no reduction by Fehlings' test. Her blood pressure was 119 mm. of Hg.

VAGINAL EXAMINATION: — Lacerated perineum on the right, slight prolapse of the anterior vaginal wall, slight bilateral tear of the cervix. Cervix is soft and in normal position. Uterus is in anterior position and corresponds in size to a normal three months pregnancy. Nothing abnormal felt on the sides. Rectum is full of hard fecal matter.

I went over with her the various points in the hygiene of her pregnancy, stopped all tea, allowed her to have one cup of coffee, told her to drink enough water, milk or cocoa to pass at least three pints of urine, and advised her to have her eyes examined at once because of her headaches. Although she says her bowels move well it is evident that they do not. She has at times taken citrate of magnesia for constipation, and she was told to take her usual dose every morning for the next two weeks. She is to take a half hour rest morning and afternoon.

January 8. The oculist can find no indication to change her glasses and says the condition of the eyes will not give her the headaches. Specimen of urine, 24-hour amount four pints, color normal, acid in reaction; specific gravity 1.010, albumin absent by nitric acid, sugar absent. Sediment slight. Occasional leucocyte; few round cells; no casts. Much vaginal epithelium.

January 16. Note to-day says that she is resting each day; that her bowels are more freely open and that her headaches have nearly gone.

February 9. Reports at the office. Is taking her rests regularly. Bowels are moving regularly with the citrate of magnesia. Now has no headaches. Blood pressure 122. Analysis of urine normal.

March 14. Telephones this morning that she has a severe headache and has vomited twice. I went to her at once. Blood pressure 120; pulse 80. No edema of the face, wrists or ankles. Bowels have moved twice to-day. Urine which she was collecting for the twenty-four hour amount was high in color. Albumin by nitric acid absent.

For the past ten days she has had but little sleep because of sickness in the family. She knows of nothing she has eaten which could have caused this condition. It was evident that this upset was nothing more than over-fatigue causing a slight indigestion, and that a good night's rest would without doubt make her feel well again. Family matters were so arranged that she obtained a much-needed sleep and in forty-eight hours she was as well as before.

July 2. She has been seen once a month and her urine

examined regularly on the first and fifteenth of each month from the sixth month. All urinary analyses have been normal. She has been in excellent condition. Palpation to-day shows a good-sized baby lying in a left position. Head is settling into the brim. Fetal heart is heard in the left lower quadrant, 130 to the minute. While palpating the uterus there were three definite contractions, unaccompanied by pain.

July 5. Telephone from the nurse that in the last half hour the patient had had three contractions with slight pain, and after the last one there was a slight show of blood-tinged mucus. I started for the patient at once and when I arrived, two hours later, she was having slight pains every ten minutes. The nurse had withheld the enema up to this time. Preparations were speedily completed. The enema was given and a good result obtained. Almost at once the pains became stronger, but the interval remained the same. Palpation showed a probable O. L. A. position; biparietal diameter is through the brim and the head is well flexed. Fetal heart is 120 in the left lower quadrant. The uterus is soft and not tender between pains. There is no history of the rupture of the membranes and no liquor comes away with pains. Her temperature is 98.6° and pulse 72. From now, 11 P.M., until six A.M. July 6th she had pains every eight minutes, lasting at first a half to three quarters of a minute. At about five they lasted a full minute, and about every other one lasted a minute and a half. The uterus relaxed well and the fetal heart remained at 120. At six-thirty the pains changed in character, began coming every three minutes and she began to have an inclination to bear down. The pains now were very hard and she asked for ether and it was given her with each pain. Palpation showed that the head had descended so that it could just be reached from above. There was no bulging and there was a moderate amount of "show." At seven A.M. vaginal examination showed the head on the perineum and a tense bag of forewaters. Posterior lip of the cervix cannot be reached; anterior is just felt and is very thin. As a pain ceased the sagittal suture was readily felt in the antero-

posterior diameter of the pelvis. The membranes were now ruptured by a rat-tooth forceps and much clear liquor came away. She was at once put in the left lateral position. With each pain she worked well, and with each pain she had obstetrical ether. She was conscious between pains and not uncomfortable. At the end of a very few pains the perineum began to bulge and steady progress was made. When the scalp appeared it was seen that the circulation was excellent. The head was held back for several pains, and the ether was forced so that she was unable to bear down at all. The uterus alone was contracting. The perineum softened up well, and between pains the head was shelled out. The occiput restituted to the left. Eyes wiped off with sterile gauze and mouth cleaned out; cord felt for and found about the neck. Traction made in order to slip it over the head, but it was too tight and it was also too tight to slip over the shoulder. Immediately put on the cord two half-length clamps and cut between them. The anterior shoulder was then drawn down under the arch and was readily delivered and the posterior followed. The nurse followed down the uterus, and the body was delivered without difficulty. The baby cried at once, was thoroughly drained and put aside. Ether was stopped as soon as the baby was born.

The uterus relaxed more than usual and the nurse had some difficulty in making it contract. The patient quickly came out of ether and was rolled over on her back and her legs steadied by the nurse. Examination of the perineum showed no fresh tear.

The baby was born at 7:43 A.M. and at 8 A.M. the placenta came away intact with all the membranes. The patient's pulse was 72, and at no time had it been over 90. She was cleaned up, sterile dressing put on the vulva and she was put back to bed. The uterus acted poorly, relaxing constantly and filling up with blood so that many large clots were expelled from it. Ergot was given intramuscularly, and with careful holding of the uterus it soon began to act better. The cord was tied with two ties of bobbin. There was no bleeding. The baby was wrapped up in a blanket with a

hot-water bottle nearby and put carefully aside until the nurse was ready to wash it. Examination of the baby showed it to be a normal child. It weighed eight pounds. After it was washed on listening to its respiration the lungs were found to be expanded. The heart sounds were normal.

About nine o'clock the patient was given a cup of cocoa and it did not distress her. By ten the uterus was acting well and staying firmly contracted and the nurse then put on the abdominal binder. The patient voided urine without difficulty.

The following orders were left with the nurse:

1. Four-hourly temperature and pulse chart until the milk is well established.
2. Report excessive flowing or rise in pulse.
3. Soft solid diet until the bowels move.
4. Credé the uterus every four hours; oftener if it fills up with blood clot.
5. Watch baby for mucus.
6. Watch cord for bleeding and report at once if any.
7. Give baby two drams of boiled water every four hours.
8. Nurse baby for two minutes on each breast late this afternoon and to-morrow every four hours for five minutes on alternate breasts.

I left at 12 M. both patients in excellent condition.

July 7. Temperature 98.6°; pulse 58. Fundus hard, at the level of the umbilicus. Abdomen slightly distended; bowels have not moved. Has voided several times. Lochia profuse and red; normal odor. Breasts not filling up but colostrum can be expressed. Baby took hold of the nipples well yesterday and started up severe after-pains, which lasted for one hour.

Baby has voided and passed several large movements of meconium. The patient was given this noon half an ounce of castor oil. To-morrow she is to have her regular diet.

July 13. Temperature has been normal; pulse varies from 70–80. Lochia is still considerable and red in color; normal odor. Fundus is firm and is felt at the symphysis. Breasts are soft but full. No cracks in the nipples. Baby is nursing now every two hours for ten minutes on alter-

nate breasts and is satisfied. Mother's bowels move daily with a five-grain tablet of cascara in the evening and an enema in the morning.

The baby is gaining now an ounce a day; movements, seven or eight a day, bright yellow and smooth. The umbilicus is moist and has a slight odor. The cord, except for the vein, is entirely separated. Umbilicus and vein wiped with 70% alcohol, dried with a sterile sponge and the vein religated with sterile bobbin. Umbilicus powdered with bismuth subgallate and sterile gauze put over it with the band to hold it in place.

July 17. Telephone from the nurse at 11 P.M. that the patient was complaining of pain in the left breast. It was tender to the touch; it was not full and no lump could be felt. The baby had nursed from it at 10 P.M. The patient had not spoken of any discomfort in the breast until after the nursing was over, but she then said she had had some pains since the afternoon but that it had only just become tender to the touch. Temperature 98.6°; pulse 72. I told the nurse to put an ice-bag at once to the breast; to keep a four-hourly chart, to let the baby sleep after its 2 o'clock nursing as long as it would and not to nurse from this left breast until after telephoning me.

July 18. At midnight temperature 101.2°; pulse 92. Breast was tender and full, and the patient complained of a severe headache. At 3 A.M. temperature 102°; pulse 92. At seven this morning when the nurse telephoned the temperature was 98.8°; pulse 68. The baby was still asleep. She was told to nurse the baby when it waked, on the right breast and to give the baby an ounce of a modified milk, fat 3.00%, sugar 6.00%, proteid 1.00%, no heat, no lime water, for its next feeding. At 12 noon the temperature was 98.8° and the pulse 70. I told the nurse to let the baby nurse from the left breast, but as soon as the nursing was over to reapply the ice-bag. I saw the patient at four this afternoon. The temperature was 98.8°, pulse 72. In the lower inner quadrant is a lump the size of a pigeon's egg which is not tender. The baby nursed at four from the left breast and it caused no pain. Ice was kept on the

breast until 10 P.M. The temperature at that time was normal and the pulse 70.

July 19. Morning temperature 99°, pulse 80. I saw her at noontime. Temperature 99°, pulse 72. Breast is full, but no definite point of tenderness made out. No lump felt. Told the nurse to take the ice-bag off one-half hour before nursing is due on this breast and then to let the baby nurse. Ice-bag then to be reapplied. If no temperature at four to nurse again. The baby's umbilicus is solidly healed.

July 20. Temperature has remained normal. Pulse 60–70. Small lump is felt by the nurse in the left breast, but it is not tender.

August 4. The baby is not satisfied on the breast, cries after its nursing, and wakes up before it is time to nurse. Put on to supplementary feedings of a fat 3.00%, sugar 6.00%, proteid 1.00%, no heat and no lime water, of one-half to one ounce, depending upon how much breast milk the baby obtained, as shown by weighing before and after nursing.

VAGINAL EXAMINATION: — Fair perineum showing the previous tear. Very slight bilateral tear of the cervix. Uterus normal in position and size. Nothing abnormal felt on the sides. No tenderness present in the pelvis; no vaginal discharge. Breasts are soft; no lump can be found. No cracks in the nipple. Baby's umbilicus is healed, and there is no bulging. Movements are well digested, yellow in color, four to six in number, each twenty-four hours.

Case 10. OCCIPUT RIGHT POSTERIOR. NORMAL DELIVERY. The patient is seen for the first time January 10. She now is six months advanced in her third pregnancy. Up to the present time she has been under the care of her physician out of town, but she now has come in town to stay until the delivery is over.

Her first pregnancy was a long thirty-six hour labor but she finally delivered herself with severe lacerations. She was repaired at once but she says the stitches did not hold. Her second pregnancy followed two years later and she again delivered herself and again was badly torn. This time she says she thinks the stitches held. The children weighed eight and eight and a half pounds. She was not allowed to have ether at either delivery.

The present pregnancy follows the last at a three-year interval and dates from her last menstruation which was June 30. It had the usual characteristics. There was no period in July. She expects to be confined about April 6th. She is in excellent condition, bowels are moving regularly with the help of one five-grain tablet of cascara. Is drinking six to eight glasses of water each day. Her appetite is excellent and she sleeps well. She says that the examinations of her urine have all been reported as normal. She was told to collect the twenty-four hour amount and to send a four-ounce specimen from this mixed quantity.

January 12. Specimen normal in color, acid, specific gravity 1.010. Albumin by nitric acid absent; sugar, no reduction by Fehling's solution. Amount three pints. The patient reports at the office the first of February and March bringing with her a specimen of urine. She is in excellent condition and the analyses of the urine were normal.

March 18. Palpation of the abdomen to-day shows a large baby. Fetal small parts readily felt on the patient's left. Firm smooth resistance on the right. The head is felt at the brim and is freely movable. The baby is very lively and causes the mother much discomfort. Fetal heart is best heard in the right lower quadrant, 120 to the minute.

April 8. At five o'clock this morning patient was awakened by several slight pains but they soon passed off and she had

no more. At 2:30 P.M. after a quiet morning with no contractions patient telephones that she is having slight pains every half hour and that they began at noon. The nurse was sent for and an hour later when she arrived the pains were coming regularly every fifteen minutes lasting thirty seconds but were very sharp. She was prepared at once. Her temperature was 98.6° and her pulse 80. I arrived at the patient's house at 3:45 P.M. Pains were then coming every eight minutes, from forty-five seconds to a minute in duration. There was no show. The uterus was relaxing well between pains. Palpation showed the head well in the pelvis. Membranes had ruptured a few moments before I got to the house. The fetal heart was 120 to the minute and regular. Vaginal examination was made with patient on her left side. Examination showed the os practically fully dilated. Nothing but the thin anterior lip could be felt. Head within an inch of the vulva. Posterior fontanelle on the right, in the transverse diameter of the pelvis. Anterior fontanelle cannot be felt. Pains now came every three minutes markedly increasing in severity and lasting one to one and a half minutes. Uterus was relaxing well between each pain. Not tender. Obstetric ether was now given to her. At 4:45 all the preparations for delivery were complete. The ether worked beautifully and she remained in excellent position. With each pain she now worked hard. At five P.M. the perineum began to bulge and with each succeeding pain advance was made. At 5:15 the scalp appeared at the vulva. The circulation as shown by pressing the finger on it was excellent. Ether was now forced with each pain and also during the interval. She soon was fully under its influence and the uterus alone was working. For some minutes the head was held back until the perineum was fully stretched. The scar from the first delivery could readily be seen running to the sphincter. The head was finally allowed to come along between the pains. The occiput restituted to the right showing the position to have been an O. D. P. The cord was at once felt for but was not found. The eyes were wiped clean with a sterile sponge and the mucus wiped from the mouth. On the next pain

the anterior shoulder came down under the arch and without difficulty the shoulders were delivered and then the body. Care was taken to keep the shoulders and body off the perineum as much as possible. Ether was stopped as soon as the child was born. The patient was absolutely unconscious at the delivery. The baby cried at once vigorously. As soon as the cord stopped beating it was clamped and cut. The uterus was followed down during the delivery by the nurse and after the delivery was held by her. The uterus continued to contract and one-half hour later the placenta was expelled intact with all the membranes. The patient was still lying on her left side somewhat etherized. There was no bleeding and the uterus acted well. She was now rolled over on her back in lithotomy position and the perineum examined. There was no external tear. There was a slight internal tear on the left which was repaired at once with two chromic catgut sutures. She was then cleaned up, a sterile pad put on the vulva and made comfortable in bed. Pulse immediately after the delivery of the placenta was 65. The uterus was firmly held for forty-five minutes because of the very severe after-pains she had after her second delivery when the uterus was not held at all. Baby weighed 8 pounds and 14 ounces. At 7:30 P.M. she was in excellent condition. Temperature 100°, pulse 70. She was having slight after-pains for which I ordered a half grain of codeia by mouth if they kept her awake.

April 9. With the help of the codeia she had a fair night. She voided urine without difficulty. Pulse 72. Temperature 98.6°.

April 10. Slept eight hours. The breasts are flabby and no milk can be expressed. The baby is hungry and was put on a modified milk of fat 2%, sugar 6% and proteid 1%. No heat and no lime water. Half an ounce every four hours. Patient's bowels moved this morning by enema and a good result obtained.

April 11. Milk came in with a rush this morning and the baby is to be put to the breast every two hours. The nursing started up severe after-pains and this afternoon she passed a clot the size of a baby's fist. Temperature 98.6°, pulse 70.

The convalescence was absolutely normal and she got up on the twenty-first day. There was no flow. Examination on the twenty-fourth day under aseptic precautions showed slight bilateral tear of the cervix. Uterus in first degree retroversion. Normal in size. No tenderness. Freely movable. No tenderness in the pelvis. Perineum shows tear in both sides, from the two previous deliveries. Sutures which I placed are present and apparently held the tear in good approximation. Patient went to her home on the twenty-fourth day in first-class condition as was the baby.

Case 11. NORMAL PREGNANCY AND LABOR. OCCIPUT LEFT ANTERIOR. Patient is seen for the first time May 5. She has been under the care, up to the present time, of her family physician but from now on she is to be under my care for delivery. Her last menstruation was August 23rd, making delivery due the first week in June. She has had an absolutely normal pregnancy and the urinary analyses her physician tells me have all been normal. At no time has the blood pressure been over 120 mm. of Hg. Her first baby, which weighed eight and a half pounds, was born eighteen months ago. Normal delivery. She was told that she was slightly torn. The tear was repaired at once by two stitches. Three months after the first child was born she complained of much backache and a bearing down sensation. She was then examined and the uterus found to be in retroversion. It was replaced in position and a pessary inserted. By wearing the pessary she is absolutely comfortable. Pessary in the present pregnancy was taken out at the beginning of the fourth month. Palpation to-day shows a fair-sized baby. The back is on the left. Small parts definitely made out on the right. The head is but slightly movable in the brim at the present time. Fetal heart is 130 to the minute in the left lower quadrant. Vaginal examination not made.

May 24. Telephone from the nurse at half-past seven that her patient had started in labor and that for the last hour has had pains every twenty minutes with good uterine contractions. I saw her at nine. She has not had any pains for the last half-hour, and in the next half-hour had none. Palpation the same as before except that the head by means of the fourth grip is well in the pelvis. Fetal heart 130 in the left lower quadrant. The patient is not in labor and I left orders that I be notified at once when the pains begin.

May 29. Telephone from the nurse at half past five A.M. that the pains had started at half-past four every twenty minutes and that now the last two pains had come at five-minute intervals, that the membranes had not ruptured. I went to her at once. At half-past six the pains were coming

every eight minutes lasting half to three-quarters of a minute. Palpation shows a definite O. L. A. position. Fetal heart 130 in the left lower quadrant. Head can just be reached from above by the fourth grip. Uterus is soft between pains but during a pain contracts well. Patient's pulse is 80. Temperature 98.6.

9:30 A.M. Pains have gradually increased in strength and are now lasting a minute to a minute and a half with intervals of two minutes. Vaginal examination showed the os fully dilatable. Posterior lip can just be reached while the anterior lip is thick and readily reached. The head is on the perineum and the saggital suture is in the antero-posterior diameter. At quarter-past ten the patient began, of her own accord, to bear down and there was the slightest suggestion of bulging. Membranes had not ruptured. At half-past ten I ruptured the membranes and for twenty minutes all pains stopped. At five minutes of eleven she had a hard long pain and the perineum bulged. Preparations for the delivery had been completed and she was at once put in the left lateral position for delivery. Pains now began coming every three minutes, lasting one minute. She refused absolutely all ether and said she "wanted the sensation of doing it all herself." She worked well with each pain, holding her breath and pulling on the sheet which was tied to the footboard of the bed. She very quickly brought the occiput in sight and at ten minutes past eleven the head had to be held back in order to let the perineum gradually stretch up. Patient acted splendidly. As soon as the perineum was on the stretch the sheet was taken away from her and she used only her abdominal muscles to bear down. On the next pain she was made to pant; the uterine muscle alone was acting. The head was delivered readily between pains and the occiput restituted to the left. Cord not around the neck. Eyes wiped off with sterile gauze. Mouth cleaned out. With no difficulty the shoulders followed on the next pain. The baby cried at once and the cord was pulsating. The nurse followed down the uterus well. The baby was held up by the feet and thoroughly drained. There was no bleeding. When the cord stopped pulsating it

was tied and cut and the baby carefully done up and put away. Patient was turned on her back and her legs were steadied by the nurse. Twenty-five minutes after the baby was born the placenta came away spontaneously, intact with all the membranes. Examination of the perineum showed no fresh tear. The patient was in excellent condition. The uterus acted well and stayed hard. Pulse 90. She was cleaned up and a sterile pad put over the vulva. The uterus was held for about twenty minutes and it did not relax. Pulse dropped to 80 and the nurse then put on the swathe and the patient was made comfortable in bed. Left the patient at half past twelve with a pulse of 80 and uterus hard. No oozing and in excellent condition.

Evening visit. Patient has voided. Uterus is hard and lochia is normal in amount and character. There is a slight amount of colostrum in the breast and the baby is to be put to the breast every four hours. Temperature 100.5°, pulse 72.

May 30. Temperature 98.6°, pulse 72. Uterus is hard and not tender, at the umbilicus. Lochia is normal in amount and in character. Breasts are soft and not filling up. Baby took hold of the nipple well; it has voided and passed meconium. It weighed at birth seven pounds and fourteen ounces. Castor oil, one ounce, ordered to be given early to-morrow morning, to the mother.

June 2. Temperature to-night 98.4°, pulse 70. Uterus is hard and felt just above the pubes. Lochia is scant. There has been nothing on the pad since noontime to-day. Breasts are full and slightly tender, but the baby is nursing now every two hours and nurses them out fairly well. Bowels have been moved daily by an enema.

June 8. Temperature has been normal. Pulse varying from 60–80. Uterus can just be palpated from above. Occasionally there is a slight amount of lochia on the pad.

June 12. Both mother and child have done well. The baby is nursing regularly every two hours for fifteen minutes, and is gaining one to two ounces a day. Patient began her leg exercises to-day. (Page 129.) Uterus cannot be felt from above and the lochia has practically ceased.

She is to sit up for one meal a day for the next three days, and if the lochia does not increase is then to sit up in bed for all of her meals each day.

June 16. Lochia has not increased. Leg exercises have made her abdominal muscles slightly lame. Baby is doing well but the umbilicus is not quite dry.

June 18. Examination to-day shows the uterus is normal in size and normal in position. Bilateral tear of the cervix. There is a marked cystocele and a slight rectocele present on bearing down. Because of her previous history pessary was put in before she got out of bed.

July 5. She is about her house feeling absolutely well. No vaginal discharge. No sensation in the pelvis of bearing down. She is going away for the summer and her local doctor is to change the pessary once a month. The breasts fill up well in between nursings and are soft. Baby's umbilicus is healed. Movements are normal and both patients are in excellent condition.

Case 12. NORMAL MULTIPAROUS LABOR O. D. P. RETAINED MEMBRANES. The patient is seen for the first time June 1st. She is seven months advanced in her fourth pregnancy. Her first two pregnancies ended in normal deliveries. In the third the membranes ruptured before the onset of labor, and after a long, tedious, inefficient labor she was delivered by high forceps. She made an excellent convalescence from all these deliveries. Her last period began on November 19th. In her three other deliveries she has reckoned the date correctly to the day each time.

Urine analyses have all been reported as normal up to the present time. From now on to the end of her pregnancy the urine was examined once in two weeks. The amount of urine has always been between three and four pints, there has been no albumin present, and there has been no reduction by Fehling's solution.

July 28. She is in excellent condition. Is walking about a mile each day and goes in swimming nearly every day. Palpation of the abdomen shows a fair-sized baby. The back is on the right. Small parts definitely made out on the left. The anterior shoulder is readily palpated well forward to the left of the median line. The head is at the brim, freely movable. Fetal heart is best heard in the right lower quadrant, 120 to the minute.

August 4. She is sleeping poorly. Motion of the baby is very active and causes her much discomfort, but no real pain. For the past three days she has been having contractions of the uterus accompanied with slight pain. They come irregularly in frequency and in strength. While I was talking with her, she had in ten minutes three contractions with definite pain in the lower abdomen. For the past week she has been drinking but three glasses of water a day, and she has been constipated. She was told to drink at least ten glasses of liquids, and to increase the dose of cascara, enough to get one good movement each day. For her sleeplessness she was given trional gr. x at bedtime.

August 10. She has taken the trional three or four times since last note and has had good nights. Her bowels now are regular and she is passing sufficient urine, analysis of

which is normal. The past three days the contractions have not been marked and the baby has moved practically not at all.

August 25. The patient telephones this morning that for the past two nights she has been having pains for an hour or two with good contractions, coming at irregular intervals of five to thirty minutes. They then would cease and she would sleep for the remainder of the night. There has been no show. At one o'clock this afternoon the pains began coming regularly every fifteen minutes and she says she feels them more in her back than at any other place. The nurse at once prepared her for delivery. From three to four P.M. the pains came every eight minutes. They then stopped entirely.

At seven P.M. the pains started up again and began, at once, coming every five minutes, lasting one minute. The uterus relaxed well between the pains. Palpation showed a right position as before. Head is freely movable at the brim. Fetal heart is 128 and regular. There is a very slight show. From now until eleven the pains continued severe every five minutes, lasting one minute.

11 P.M. VAGINAL EXAMINATION: — Posterior lip of the cervix is thin and can just be reached; the anterior is much thicker. The membranes are bulging through the os and are very tense. The head can just be reached and is freely movable above the brim. She has no inclination to bear down. Preparations for delivery are completed at once.

From eleven to twelve the pains were less severe and came at seven-minute intervals and lasted one-half to three-quarters of a minute. At 12:30 A.M. the pains were very severe, coming every two minutes, lasting three-quarters of a minute. Obstetric ether was now begun. She now had the slightest inclination to bear down. Everything was ready for the delivery.

Patient was put across the bed in lithotomy position. With a sterile towel over the lower abdomen the head was grasped by the left hand and pushed into the brim and as a pain was going away the membranes were ruptured. Clear amniotic fluid came away. The head at once descended.

No cord was felt. The nurse listened to the fetal heart and it was regular. The patient was at once turned to the left lateral position.

No pains came for ten minutes. They then returned every two minutes. With each pain she worked well and after a few pains the perineum began to bulge. Ether was now forced with each pain. The scalp appeared at once. She made very rapid progress. The head was carefully delivered between pains. No cord about the neck. Eyes wiped off and mouth cleaned out. Shoulders born without difficulty as was the body. The baby cried at once. The baby was born at 1 A.M., August 26. Uterus contracted well. Ether was stopped when the baby was delivered. Pulse 90. The cord after it stopped beating was clamped and cut. The patient soon came out of ether and was turned on her back across the bed. Twenty-five minutes later the placenta was delivered intact, but the membranes did not all come with it. A hemostat was snapped on the piece of membrane protruding from the vulva and with careful twisting more of the membranes were removed. By inspection it was very evident that all were not removed. There was no bleeding. The uterus contracted well. Examination of the perineum showed no fresh tear. Pulse 90.

Patient was cleaned up and a sterile pad placed over the vulva. She was put back to bed in excellent condition. Uterus stayed well contracted, normal amount of flow. Pulse dropped to 80.

One hour after delivery was completed the pulse was 76, uterus hard, normal amount of flowing. I then told the nurse to put on her binder. The baby weighed 8 pounds, 4 ounces and was in excellent condition.

August 27. Temperature normal, pulse 72. Uterus hard, on the level with the umbilicus. Not tender. Breasts flabby, but a slight amount of colostrum can be expressed. Baby ordered to breast once in four hours for three minutes on each breast. Patient has voided. Lochia is profuse and bright red, and this morning the nurse expelled from the uterus one small clot. The patient is slightly distended and

a suds enema ordered. Castor oil, half an ounce, ordered to be given sometime early to-morrow morning.

August 29. Temperature has not been over 99°. Pulse has ranged between 70 and 80. Lochia is much less profuse; light in color. Yesterday a long strip of membrane was found on a pad. The lochia is of normal odor. Uterus is firm and two finger's breadth above the symphysis. The milk came in slowly. The baby now is nursing regularly every two hours and is satisfied. Patient's bowels are moving regularly with five-grain tablet of cascara in the evening followed by a small enema in the morning.

September 10. Has made an excellent convalescence. Uterus cannot now be felt above the symphysis. She has a slight vaginal discharge which now and then is streaked with blood. She has been sitting up in bed for her meals since the fourteenth day. She began her exercises on the fourteenth day and they have not increased the lochia.

September 25. Patient got out of bed on the twentieth day and walked to the bathroom. She had no "pins and needles" in her feet. She has gradually increased her walking and on the twenty-fourth day went downstairs once.

A slight bloody vaginal discharge appeared to-day which the patient thinks is the return of her menstruation. She says that after her second pregnancy she began menstruating one month after her delivery and continued regularly. She therefore was not examined at this time. From now on she is slowly to resume her usual duties and is to report to me if the menstruation does not cease in the usual time. The baby is doing consistently well.

October 13. I did not see this patient again until to-day and she has made no report to me since the last note. She says she has been bothered now and then with a slight bloody discharge. At no time has it been marked except once when she was standing up having dresses fitted. She then soaked through two pads with bright red blood in one hour. At no time since the last note has she felt she could go without a pad because of this discharge. She refused a vaginal examination at this time. She was given a prescription for equal parts of the fluid extracts of ergot and hydrastis and

told to take a teaspoonful every four hours for three days. If at the end of this time she had not stopped flowing entirely she was told she must be examined to determine exactly the cause of the flowing. To this she agreed.

October 16. Patient telephones to-day that there has been no discharge for twenty-four hours, that she was not wearing a pad and was feeling well in every respect.

October 24. This evening she telephones that she has been flowing occasionally for the past forty-eight hours and has had to use in the last twenty-four hours six napkins. No clots have been passed. Except for this flowing she has been perfectly well and is nursing the baby which is doing well.

October 25. She comes to the office to-day for examination.

VAGINAL EXAMINATION: — Slight old lacerations of the perineum. No bulging on straining, slight bilateral tear of the cervix with slight erosion, which does not bleed when touched. There is a bloody, thick, stringy discharge coming from the cervix. The uterus is in third degree retroversion. It is not tender, but is soft and enlarged. There is nothing felt on the sides and there is no tenderness in the pelvis. By bimanual manipulation the uterus was replaced with ease and it did not when left alone fall back into retroversion. It was again found to be enlarged and very soft. A pessary was inserted in the vagina which held the uterus in excellent position.

October 29. Twenty-four hours after the pessary was put in all flowing stopped and there has been none since. Vaginal examination shows the uterus held in normal position and of normal size. It is distinctly smaller than at the last examination and less soft. The pessary causes no discomfort. Inspection shows that there are no abrasions present in the vagina. Pessary cleaned and replaced.

December 4. Patient reports at the office to-day. There has been no flowing since the last visit. She feels perfectly well. Is nursing her baby and it now has one bottle a day and she is taking entire charge of it. She says she has no discomfort from the pessary and would not know it was present.

VAGINAL EXAMINATION: — Uterus in normal position, small and firm. Pessary removed. Inspection shows no abrasions present. Pessary cleaned and replaced.

Further history of this case was that she came into the office to have the pessary cleaned and replaced every six weeks. Menstruation returned five months after the birth of the baby and was in all respects normal. The pessary was worn for six months after it was first inserted and then removed. Two months after it was removed she was examined by vagina and the uterus was found in normal position, very small and firm, freely movable and not tender. She was still nursing her baby with the aid of two bottles and the baby has done consistently well.

The uterus was noticeably small. This is not an unusual occurrence in a nursing woman; the name given this condition is lactation atrophy. It is a well-recognized condition and when found should cause no surprise. Gradually after nursing is stopped the uterus recovers its normal size. This condition is usually not so well marked in patients where menstruation has returned during the nursing period, but that it does appear under these circumstances is proved by this case.

Case 13. NORMAL PREGNANCY AND LABOR. SLIGHT HEMORRHAGE. SHOCK. Patient is seen for the first time in the present pregnancy May 20th. Her last menstruation began March 28th making delivery due about January 7th. Her first child was born three years ago next August, after a rather difficult high forceps delivery; her second, thirteen months later after a quick labor of three hours. From both these pregnancies she made a good convalescence. She is having but a slight amount of nausea and no vomiting. She is very uncomfortable at times because of the acid taste in her mouth. Aside from this she is in excellent condition. She was reminded of the care she must take of herself during this pregnancy and warned not to attempt to do a great deal because of the fact of having had the children so rapidly. For the acid eructations she was told to take a teaspoonful of milk of magnesia as often as necessary for relief and also told to rinse out her mouth with this several times a day.

October 5. Since the last note she has been away for the summer. The milk of magnesia relieved her much. Except for increasing difficulty in moving her bowels she has been in excellent condition. Compound licorice powder and fluid extract of cascara were of no avail but phenolphthalein two-grain tablets three times a day worked well with her. The urine analyses have all been normal. Her blood pressure to-day was 120 mm. of Hg.

December 2. Palpation to-day shows a fair-sized baby. The back is on the left. Small parts on the right. Head freely movable at the brim. Fetal heart in the left lower quadrant, 120 to the minute. Blood pressure 118 mm. of Hg. She is passing four pints of urine, analysis of which is normal. Bowels moving well every day.

January 7. 3:30 A.M. telephone from the nurse saying that for the last hour the patient had been having contractions with slight pains. They were lasting only twenty seconds and she said she was doubtful whether the patient really was in labor. I told the nurse to telephone again in an hour, sooner if necessary. In half an hour she telephoned saying the pains were continuing and were now slightly harder lasting half a minute and the last two had come at

five-minute intervals and were hard and sharp. I went to the patient at once, arriving shortly after five o'clock. From the time of the last telephone message to now she had had absolutely no pains but had not slept. Fetal heart is best heard in the middle line three inches above the pubes, 120 to the minute. Baby is in a left position. Head is freely movable at the brim. From now until half past seven she slept in naps and had absolutely no pain. It is very evident she is not in labor and I left the patient.

January 8. Nurse telephones at 12 midnight saying the patient has just been awakened by a great amount of motion of the baby and the motion was so marked that the nurse saw it across the room. It hurt the patient a great deal. In the course of few moments motion ceased and then the patient noticed that she was having contractions. I reached the patient at half past one A.M. Fetal heart was 120 in the left lower quadrant, loud and regular. Palpation showed a definite left position, firm resistance on the left with small parts on the right; the head was firmly engaged in the brim, biparietal was nearly through the inlet. The fingers of the left hand could be pressed down much further on the left than could the fingers of the right hand on the right side showing the head to be well flexed. No history of ruptured membranes. She now was having pains every ten minutes lasting from one minute to a minute and a half. Pains continued coming every ten minutes and at three o'clock palpation showed that the head could just be reached from above. At four o'clock pains came distinctly harder and she began to bear down with each pain and asked for ether. Pains were now of five-minute intervals lasting one to one and a half minutes.

VAGINAL EXAMINATION WITH PATIENT IN LEFT LATERAL POSITION: — Examination made just as a pain was beginning. Introitus relaxed. Head one inch from introitus. Good bag of forewaters. Posterior lip of the os not felt, anterior edge thin and is readily reached. Sagittal suture is in the antero-posterior diameter. As the pain let up I ruptured the membranes and clear liquor came away. Fetal heart listened to, regular, 120 to the minute.

She was now given ether with each pain by the nurse. The pains continued to come regularly. Preparations for delivery were complete. The patient was in the left lateral position and worked well with each pain. In half an hour she brought the scalp into view. Circulation was normal. As she brought the head further in sight, it was noticed that the circulation in the scalp was poor. The chin was caught by the left hand behind the anus and delivery hurried by means of pressure from behind the anus with this hand. The head delivered, the cord felt for and found about the neck. Traction on the neck brought the anterior shoulder under the arch and the cord slipped back over this shoulder. The posterior shoulder was then delivered. The body followed without difficulty. The baby was born at 4:45. The cord was not pulsating. The baby was drained at once and mouth cleaned out. In a moment it gave a gasp. Heart was beating slowly but regularly, about 90 to the minute. The baby was very blue. By gentle slapping on the buttocks and blowing on the chest it very soon began to breathe regularly and became of good color. It then cried lustily. Immediately following the birth of the baby a large amount of meconium came away. The uterus acted well and it was held by the nurse. The cord was tied in two places and cut. Ether was stopped at the birth of the baby.

She was now turned on her back and twenty-five minutes after the delivery began to bleed profusely. Vaginal examination showed that part of the placenta was lying in the os. It was immediately expressed but only after considerable amount of force was used. Inspection showed it to be intact with all the membranes. Uterus relaxed a little and ergot was given intramuscularly. She was then washed up and put back to bed and she at once collapsed. Pulse became 160 and was almost imperceptible at the wrist. A hurried examination of the heart showed sounds to be clear and by percussion no dilatation was found. She was restless and of bad color. She was given at once an eighth of morphia subcutaneously. The pulse very shortly began to improve, she was quiet and the volume of the pulse became very much better. There was absolutely no bleeding from

the uterus which remained hard. At 7:15 she vomited and again went to pieces. This time I gave her four ounces of black coffee and two ounces of water by rectum which she retained. I gave her subcutaneously 1/20 gr. of strychnia with 1/50 gr. of digitalin. Her pulse gradually improved in character but the rate was 160. By eight o'clock pulse had dropped to 110 and she looked very much better though she still had marked pallor. There was no excessive flowing.

From now on she improved in color. Pulse remained 110 and was of good quality. There was a normal amount of flowing and the uterus remained hard. The baby weighed seven pounds and four ounces. At ten o'clock as there was no nausea she was given a cup of hot broth which she retained and this was repeated in an hour. I left her at noon in good condition, pulse 100, temperature 100°.

January 9. Very comfortable. Pulse 110 and of good volume. There is small amount of milk in the breasts and baby is to nurse once in four hours. Uterus at the umbilicus. Is tender. Temperature is 99°.

January 10. Uterus is one finger breadth below the umbilicus. Is well contracted and tenderness less marked than yesterday. Tenderness probably due to the fact that the uterus was held hard at the delivery and because of the force used to express the placenta. Temperature is normal and pulse to-day dropped to 80. Baby is satisfied on four-hour nursings. Patient's bowels were moved this morning by one ounce of castor oil.

January 11. Temperature this evening 102.5°. Pulse 100. Breasts are tender and very full but without any lumps. Abdominal examination is absolutely negative. Baby is nursing well.

January 12. Temperature 99°, pulse 80. Breasts less tender, but still full. Lochia normal.

January 15. Temperature to-day is normal and pulse 70. She is looking very much better. Lochia is normal and the breasts now are soft and have come down to the needs of the baby. Uterus cannot now be felt above the symphysis. Started on her exercises to-day. Baby is doing well and gaining from two to four ounces every second day. Cord

has not yet separated and is moist and has slight odor. Religated and powdered with subgallate of bismuth.

January 21. Cord came off the day after it was religated and it left a large granulating base which was touched with the silver nitrate stick, wiped out with alcohol and then powdered. To-day it is very much smaller and is almost healed.

February 1. Patient got out of bed on the 29th. No prickling in her feet and no discomfort in her legs. Has conscientiously carried out her exercises for the past ten days twice a day. There is no lochia. Baby's umbilicus is solidly healed and the nurse says it has been so for the past five days and that three days ago baby had a tub bath.

February 24. Patient is now up and around the house, going downstairs as she wishes and out to drive. She is in excellent condition. Vaginal examination shows same stellate tear of the first delivery, slightly relaxed outlet, slight tear on her right but on the whole a good perineum. Bearing down gives no bulging of the anterior or of the posterior wall of the vagina and the uterus is well involuted and normal in size and position. Nothing felt on the sides. The baby now weighs ten pounds and nine ounces and is nursing regularly. Bowels are moving two or three times a day, umbilicus is solid and there is no bulging.

Case 14. PRIMIPAROUS LABOR. OCCIPUT RIGHT POSTERIOR. Patient is seen for the first time January 26th. She considers herself two and a half months along in her first pregnancy. She is twenty-two years of age, a large, robust, powerful looking girl. Her last menstruation occurred November 4th. It was at the usual time and lasted six days. Her menstruation began when thirteen years of age and lasts five days, never over six. Period comes every twenty-eight to twenty-nine days, occasionally she has been known to go thirty days. Seldom accompanied by pain. She comes at the present time because she has noticed that her urine is dark in color. Nausea is more marked in the evening than at any other period of the day. She gags a great deal but is never actively sick. What she belches up is not acid. Bowels move once a day without medicine. Her appetite is poor. She is very sleepy throughout the day. The breasts, she says, were tender to the touch at the time her first period was skipped but the tenderness is now gone. She has noticed that her breasts have enlarged considerably. She is drinking three glasses of fluid in the twenty-four hours. There is no change in the number of times she passes her water. Blood pressure 110 mm. of Hg. Specimen she passed in the office was high in color, clear, specific gravity 1.026, no albumin or sugar. She was told to drink at least eight glasses of fluids in the twenty-four hours and to measure her twenty-four hour amount of urine which must be at least three pints.

January 29. She brings in a specimen from the twenty-four hour amount of urine which was five pints. Examination showed it to be pale, acid, specific gravity 1.004. Albumin and sugar absent.

Since she has been drinking more water she has felt very much more comfortable. Much less nausea and she has been less sleepy.

March 1. She reports that for the last five days she has become more and more constipated so that for the last two days she had to take an enema in addition to the licorice powder she was taking every night. Because of this story of sudden increase of constipation I examined her by vagina

at once. Uterus found in normal position, enlarged to the size of a three and a half to four months pregnancy. Nothing felt on the sides or in the posterior cul-de-sac. She was told to take two-grain tablet of cascara sagrada three times a day and if necessary two at bedtime. Blood pressure 118.

July 23. She has reported once a month up to July. Urinary examinations have all been normal. The twenty-four hour amount is always about 2000 c.c. The blood pressure has never been over 120. She apparently is in excellent condition. Palpation to-day shows small parts on the left with smooth resistance on the right. Head is freely movable at the brim. Baby now lies in a right position. Fetal heart is heard in both right and left lower quadrants, 128 to the minute. Her pelvis measures, crests 30 cm., spines 26.5 cm., external conjugate 20.5 cm.

August 1. VAGINAL EXAMINATION: — The biparietal is just engaging at the brim but the head can be readily pushed up. Promontory cannot be reached. Ischial spines are not prominent. Inclination of the pelvis is normal and the pubic arch is normal. Bi-ischial diameter with Williams's pelvimeter 10.5 cm. Cervix is very soft and os uteri admits one finger and is flush with the vaginal vault. On the examining finger an unusual amount of blood came away but nothing abnormal was felt.

August 2. At 12:50 P.M. the patient telephones that she "was flooded." I told her to go to bed at once and I would come immediately. I found her in bed and examination showed simply that the membranes had ruptured. There was no bleeding and she was having no pains. At half-past one while I was there she had her first contraction. Palpation showed the head firmly fixed at the brim but the biparietal diameter was not through the inlet. Fetal heart 130 and regular. From then on the pains came every ten minutes and at half past three they began coming every three minutes. Palpation shows that the head has appreciably descended into the pelvis. No bleeding. Small amount of liquor coming away. She is now in very active labor. Fetal heart is 140 in the right lower quadrant. She was ahead of the reckoned time and after some difficulty a nurse

was obtained. When examined at quarter-past four she was found to be fully dilated and head was on the perineum. Posterior fontanelle was readily distinguished in the antero-posterior diameter just behind the symphysis. Pains now were very hard and were coming every three minutes. She was at once given obstetrical ether. At 4:30 she began to bulge the perineum perceptibly and was bearing down with each pain. At quarter of five put in the side position and everything was ready for delivery. With each pain she worked well and with the obstetrical ether was comfortable. At five o'clock the scalp appeared at the vulva and the circulation was good. With each pain the ether was forced. The baby was born at 5:30 P.M. The head restituted to right posterior position. Shoulders were delivered very slowly and the body came along without any difficulty. Baby cried at once and the cord when it stopped pulsating was clamped and cut. Uterus acted well and there was no bleeding. Baby was in excellent condition. Patient was then turned on her back and the placenta came away seven minutes after the delivery spontaneously. Examination of the placenta showed it to be intact with all the membranes. Careful examination of the perineum showed absolutely no tear. She was cleaned up and sterile pad put on. Put back to bed with pulse of 80 which steadily dropped and one half hour after delivery was 68. There was a slight ooze from the uterus and it had a slight tendency to fill up, but with careful holding it soon acted well. No ergot was given. At no time did the pulse go over 80. Baby weighed 7 pounds and 12 ounces. Left the patient at seven o'clock in excellent condition with the usual orders to the nurse.

August 3. Uterus hard, three finger breadths below the umbilicus. No tenderness over the uterus. Lochia normal in amount. Breasts have a slight amount of colostrum in them and the baby is to be put to the breast every four hours to-day. Baby last night had a great deal of mucus and twice it had to be held up by its heels and drained. Temperature is normal, pulse 75. Mother to be given half an ounce of castor oil early to-morrow morning. If necessary, to follow it with an enema three hours later.

August 4. Telephone from the nurse that the bowels moved well this morning and patient is in excellent condition, that the lochia is slight in amount but normal in color. Late this afternoon telephone from the nurse saying there has been no lochia since one o'clock, that the temperature is normal and the pulse 80. Nurse told to put hot-water bag over the uterus and if the lochia did not start up in the course of an hour to turn the patient over on her abdomen in order to favor drainage.

August 5. Telephone from the nurse that the lochia started up half an hour after the hot-water bag was placed on the uterus and that now it is profuse and red, with no odor. Temperature is normal. Pulse is 70. Milk is coming in and baby is now on two-hour feedings.

August 23. Patient has made an absolutely normal convalescence. Temperature has been 98.6° and the pulse has varied from 70–80. The patient is very languid and is unwilling to exert herself. She began her exercises on the fourteenth day and did them faithfully. On getting out of bed to-day, the twenty-first day, she had relatively small amount of "pins and needles." There is no vaginal discharge present. The baby is doing well and now weighs eight pounds and twelve ounces.

September 13. Baby has been put on one bottle a day of home modification, made up from certified milk, of a 2.50% fat, 6.00% sugar and 1.00% proteid. The patient is doing more and more about her house, is out walking and driving and is steadily improving. Vaginal examination to-day shows no discharge. No tear of the perineum. Cervix has a very slight bilateral tear. Uterus normal in position and freely movable. Nothing present on the sides. Baby has done uniformly well. Umbilicus is solidly healed and there is no bulging. Case discharged.

Summary of Normal Pregnancy.

The prenatal care that the average physician gives a pregnant woman is appallingly little. The blame for this condition of affairs lies to a great extent with the teaching of

obstetrics in the majority of medical schools (Williams, Journal A. M. A., Vol. 58, No. 1, p. 1).

The laity regard childbearing as a normal physiological act and take it for granted that nothing can go wrong. Pregnancy may be normal, but there is no physiological condition which verges so often, and so quickly, upon the pathological.

Because this is an established fact the need of intelligent medical care of the pregnant woman is essential. As advance in obstetrics has been made, this preventive care has been more and more insisted upon and the better the physician the more care he gives his obstetric case. There is no branch of medicine where a disastrous result may occur that does the physician's reputation so much damage as a disaster in obstetrics, and it behooves all medical practitioners who do obstetrics to do it well or to let it absolutely alone. To the careless, inefficient man disaster surely will come; possibly such an occurrence is the only thing that will arouse such a man.

When a pregnant patient places herself under a physician's care he must discuss with her what can be called the hygiene of pregnancy. Each physician will develop his own method. Many obstetricians have a printed slip which they give each patient with the fundamental facts. Whether one adopts this way or simply talks to the patient is immaterial but the various points must be covered concisely, in plain words, avoiding carefully all medical terms.

The Children's Bureau of the United States Department of Labor has recently issued a most valuable pamphlet on Prenatal Care. It can be obtained for the asking by writing to the Children's Bureau. In large clinics this pamphlet can be given to each new patient and great good should result from it. Davis's "Mother and Child" and Slemons's "Prospective Mother" cover more fully than is possible in a small pamphlet the necessary points that a pregnant woman should know and with many patients in private work great help comes from their having one or the other of these two excellent books.

One must go over with each patient her previous history

both as regards her health and also the character of her previous pregnancies and labors if she is a multigravida. Her menstrual history must be determined and the beginning of her last menstruation carefully noted. In all of the cases here recorded, I have not put this down because of obvious reasons, but in all cases these facts were determined and recorded. The reckoning of the date of labor is most unsatisfactory and of all the ways suggested, I have found in my practice that if one takes the first day of the last menstruation, counts back three months and adds ten days, that the date thus obtained is as close as can reasonably be expected. I then tell all patients to be ready for their labor at least two weeks before this date and that they may expect to be delivered a week before or after this date. Never make one date and allow your patient to think that if she goes beyond this date that she is going over time. The possibility of mistakes either way are too great; a labor two weeks before or after the suggested day is so common that nothing is thought of it. Find out if the patient knows that pregnancy could not have begun until two weeks, even three weeks, after a period and in these cases reckon from this time and not the period. (Case 17.)

The histories of the previous cases show briefly the care that should be given pregnant patients. In all of the above cases I have not recorded each and every visit that the patient made, grouping some and omitting others, bringing out one point in one case and a different one in another. Now let us go over the various points one by one.

The bowels must move once a day. If they do not do so naturally, a mild cathartic, such as cascara, compound licorice powder or phenolphthalein, must be used. Each patient must determine the dosage necessary. Even if the bowels move of themselves daily, sometimes the evacuation is not sufficient as was seen in Case 9. In the last two months of pregnancy it is best always for the patient to take, once a week at least, a cathartic to clear out thoroughly the intestinal tract. This is especially true if the patient is constipated and relying on enemas alone to obtain a dejection.

The urine should be measured once a month from the

sixth month at the latest and the twenty-four hour amount must be three pints, or more. In order to obtain this amount fluids must be freely taken. Water is the best. Case 14 came first to the office because she had noticed that her urine was "dark." As soon as she began to drink more water her nausea and sleepiness became less and soon disappeared. The patient should send to the office a specimen of the mixed twenty-four hour amount of urine once a month from the fourth month and earlier if there is the slightest sign of toxemia present. From the sixth month the urine should be examined every two weeks until delivery. The examination of the urine consists in noting its color and amount of sediment, taking the specific gravity and reaction and determining the presence or absence of albumin by the nitric acid or heat test. If there is more than a slight trace of albumin present, more accurate estimation of the amount is obtained by using Esbach's albuminometer. On testing the urine for sugar, if a reduction by Fehling's solution takes place it is not sufficient evidence that glucose is present. Lactose also gives a reduction with Fehling's. If reduction takes place, then the fermentation test for glucose must be done; and if positive, then sugar can be said to be present in the urine. The use of Fehling's test alone has given rise to much unnecessary alarm. If a true diabetic condition exists coincident with pregnancy, then the patient must be treated for the diabetes. The pregnancy becomes of secondary importance. If a transient glycosuria is present, no anxiety need be felt. Not a few pregnant patients show this condition and if their sugar intake is reduced the sugar quickly disappears. It is not a true diabetic condition and care must be taken not to disturb these patients without sufficient cause.

If albumin is present, then a careful microscopic examination of the sediment must be done and the findings carefully noted. In specimens of urine recently passed which do not filter clear, a microscopic examination should be done for the sediment may show that a cystitis or pyelitis is present. (Case 62.)

Many patients in the last six weeks of pregnancy show

slight traces of albumin without any untoward symptoms. In such patients the most careful watch must be kept. Blood pressure observations combined with frequent urinary examinations will show impending toxemias before any other symptoms arise. Every patient should have her blood pressure taken at each visit she makes to the office. If it is found normal, 120 mm. of Hg., there is little chance that a toxemia is present. But if the pressure is found to be gradually rising, a toxemia is beginning and treatment must be begun. The treatment is taken up under the cases showing the toxemia of pregnancy.

The patient may eat anything she can digest; a full varied diet with fruit is the best. Up to the last two months I do not limit the diet unless there is some positive indication, but from then on I ask the patient to limit the amount of her carbohydrate food with the hope of obtaining a smaller baby than if she were on a large carbohydrate diet.

The amount and character of exercise a patient may take during her pregnancy depends entirely upon what she has been accustomed to. If she has been in the habit of playing golf and tennis and plays the games well, she naturally will not want to be held down to playing a slow, careful game. The result will be that she probably will not play them at all during her pregnancy and on the whole it is very much safer that she should not. If there has been any question of abortion or premature labor all athletic games must be interdicted absolutely. Walking is much the best exercise that she can have. It must not be done to overfatigue. If a patient has been out walking and comes back feeling tired and does not become rested in the course of half or three-quarters of an hour there is no question but that she has done too much. A patient's household duties will oftentimes be all that she can do and be not over-fatigued. The patients themselves must find out what the limit of their endurance is and be guided by it. The amount of exercise must be restricted at what would be a menstrual period were the patient not pregnant. In many cases, however, it is impossible to tell when a period would come but in many others the patients unquestionably feel the time of

the menstrual wave and at these times they must be quiet and avoid all but the most necessary exercise.

In recent years the general use of the automobile has brought with it many dire results to pregnant patients. Case 8 was a typical example of automobile miscarriage. If patients are going in automobiles it is much safer for them to sit in the front seat where the vibration is less than on the back seat. If they use an automobile they must not go more than fifteen miles an hour on the smoothest of roads and if the road is rough they must go at the slowest possible rate of speed. The distances must be short and they must never go on long continuous rides. Careful use of the automobile is one of the best ways for a pregnant patient to obtain fresh air, but used to the extremes that some physicians sanction I am confident it is a potent cause of miscarriage. Observations have not been noted long enough to know whether excessive automobiling will give abnormal positions or whether the umbilical cord is entangled in a larger per cent of cases, when there has been much riding, than in those where there has been none. It is conceivable that by the constant motion that the fetus is subjected to, it may, in the early months when floating in the liquor amnii, become so entangled that intra-uterine death may follow.

As soon as the pregnancy is known to have begun the patient should go to a dentist to have her teeth put in the best possible condition. No long painful work should be done at any one time. Short appointments should be sought and the work done as painlessly as possible. Temporary work sometimes will be perfectly satisfactory. The old saying "for every child a tooth" is at the present time absolutely unwarranted, and is due to the carelessness of the medical attendant. It was only very recently that I had the obstetric care of a patient who was under another physician's care during her pregnancy. She had complained to him that her teeth were paining her and that one or two fillings had come out but he absolutely forbade her to have anything done to her teeth while she was pregnant for fear of an abortion. The result now is that whenever she chews her food there is pain in her teeth and every little while she is

disturbed by their aching. Surely such a condition is a great reproach upon the medical attendant. If the patient at any time during her pregnancy is having a great deal of acid eructation, the enamel of her teeth will be preserved by rinsing the mouth and brushing the teeth in an alkaline solution. Milk of magnesia as in Case 13 has proved very satisfactory.

The skin must be kept active by daily warm baths. Avoidance of extremes of hot and cold is important. Patients who have always been in the habit of taking a cold bath in the morning can with safety continue provided they react well. The same remark is true about patients going in bathing. There is no reason why they should not go in swimming if they react well on coming out, but if they do not, bathing must not be indulged in. The vulva must be carefully cleansed each morning and night because of the increased amount of secretion that may be present during pregnancy. Unless there is some pathological condition present, douches are absolutely contra-indicated.

The dress of a patient is important for the physician to take note of. There must be no compression around the waist; the abdomen must have free chance to enlarge. As few bands as are possible should be around the waist. The principle for a pregnant woman to remember is that all clothes that can must hang from the shoulders. For the first three or four months ordinary corsets may be worn with safety provided the patient is willing to let them out according to her increase of size. What maternity corset she buys will be a personal matter to a great extent. One dealer's make will be perfectly satisfactory to one patient and be absolutely uncomfortable for another. If the abdomen is pendulous oftentimes an abdominal support will give the greatest relief.

Physicians vary greatly in the care of the breast during pregnancy. Some recommend using astringent washes during the pregnancy. Others leave them entirely alone. I have never used astringent washes. Ordinary cleanliness of the nipples is sufficient and if dry scales come, during any time of the pregnancy, they can be readily softened by lanoline

and then washed off. I have had consistently good results by having the patients let their nipples entirely alone until after the confinement is over. Occasionally one or both nipples become tender to the pressure of the patient's clothes. Here a simple ointment applied freely or an ointment of 5% orthoform in lanoline will help the condition materially. In the early months of pregnancy, when the patient is wearing her usual corsets, she should be warned not to have them come so high that they can in any way press on the breast tissue. This point is especially to be impressed on the patient during the nursing period, for if the breast at this time is pinched, serious complications may follow.

During the last months of pregnancy, in the patients who have inverted nipples, a warm bottle may be put on the nipples each night at bedtime for ten minutes. An eight-ounce nursing bottle thoroughly cleaned is warmed with hot water, the water poured out and then the bottle inverted and the mouth put over the nipple. The hot air inside the bottle gradually cools and a vacuum is established, and the nipple is drawn up into the neck of the bottle. I prefer this method to the advice sometimes given to the patient to pull out the nipples with her fingers. A miniature breast pump designed especially to pull out the nipples may be used if it can be obtained. As yet it is not widely carried by supply houses and it offers no great advantages over the bottle.

The question of sexual intercourse during pregnancy is oftentimes troublesome. No matter what advice is given it often is not followed. All physicians will probably agree that if there has been any tendency to abortion there must be no intercourse under any circumstances. Intercourse in what would be a menstrual period were the patient not pregnant is to be avoided. There is no question that in the majority of cases intercourse is indulged in during pregnancy and it apparently does no harm. The object of intercourse has been accomplished when pregnancy begins and ideally there is no reason for more, but the ideal is seldom obtained. Many patients have a marked aversion to intercourse the moment they become pregnant. Some tell of a pregnancy because of this aversion. On the whole, I think physicians

have sanctioned intercourse during pregnancy to too great an extent. During the latter months of pregnancy unquestionably damage may be done and infection may follow especially if labor should start shortly after intercourse.

The patients should be seen once a month during the first six months. They must be told that throughout their entire pregnancy they must be well. If they notice anything out of the ordinary, if their bowels are not moving well, if their urine is becoming less in amount or darker in color or if they are having any headache or if there is any sign of blood from the vagina, they must report at once to you. They are to accept no responsibility, they are not to determine whether any sign or symptom is unimportant. Make it clear that unless they are willing to report at once the slightest unusual symptom you will not undertake to look after them. By your seeing the patients monthly you come to know their characteristics, how they stand the disabilities which necessarily come with pregnancy. You know their mental poise and their physical limitations all of which help you in determining how each individual patient will stand her labor. During the last three months besides reporting at the office the first of each month, and bringing with them a specimen, I require all patients to send in a specimen on the fifteenth of the month. By this means I am in touch with them every two weeks. This is the ordinary routine; any case may vary. If anything untoward comes up, then the routine is altered to suit the emergency.

Theoretically, all patients should be examined by vagina as soon as they present themselves to you for care during their pregnancy in order to rule out an abnormal condition in the pelvis. Practically few cases are now examined at the first visit; each year I examine at once more and more cases. I intend to, and think all cases should be. In many cases it may not be a necessity; in a few some pathological condition will be found that demands surgical intervention.

In not a few cases the uterus will be found retroverted or retroflexed. When it can be replaced without difficulty it should be and a pessary fitted to hold it in position until the fundus has so enlarged that it cannot again fall back into the

posterior cul-de-sac (Case 68). If the uterus cannot be replaced with gentle manipulation without ether, then two courses are left open, either to etherize the patient and then replace and hold the uterus in position by a pessary or to have the patient report every two weeks so that the position of the uterus as it enlarges may be followed. If this latter course is determined upon then the patient should be shown how to put herself into the true knee-chest position. She should get into this position morning and night and should have no encircling bands about the abdomen when in position. A few long inspiratory breaths will help a great deal to balloon the vagina and aid the uterus to return to its normal anterior position. This latter course is the conservative one and should at the outset be tried, reserving the etherizing of the patient until one is convinced the knee-chest position will not bring the uterus up into position. Care must be taken not to allow the uterus to become so large in the retroposition that it will become incarcerated.

The pelvis should be measured in all primigravidæ by the eighth month; earlier measurement is not necessary. I do not measure multigravidae who have had average sized children with no difficulty. If the history, however, of previous difficult deliveries is obtained then they too should be measured.

The external measurements to be taken are the intercristal, the inter-spinous, the external conjugate, and the bis-ischial diameter of the outlet and the normal are in centimeters, respectively, 28, 25, 20 and 11.

The pelvimeter one uses must be tested on an accurate scale for many pelvimeters which are for sale are inaccurate and if one relies entirely on these measurements he may find himself in serious difficulty.

The inter-cristal and inter-spinous measurements are taken with the patient lying on her back with no clothing between the pelvimeter and the skin. The external conjugate is readily taken if the patient is in the right position. For this she should be lying on her left side, back to the physician, lower thigh flexed with the upper leg straight. By this position the physician can readily palpate the depression

midway between the posterior superior spines and place directly one arm of the pelvimeter with the left hand on it. With the right hand he places the other arm directly on the symphysis and then reads from the scale the distance. I usually do not measure the outlet until I make the vaginal examination, sometime in the last month of pregnancy.

Each year I am coming to rely upon these external measurements less and less. I take them for a guide, nothing more. They are of interest and help one to make up one's mind as to the probable outcome. The real test is the relation of the baby that is in utero to the given pelvis; the mere size of the pelvis unless it is actually an impossible one, and that occurs very rarely, is of little value unless the size of the baby is known. Much has been written about the measurements of the pelvis; less has been said about the relation of the baby to the pelvis and it is upon this that the successful issue of a case depends.

The methods of palpation can be given in writing, the proper interpretation of what one finds by palpation comes only after large experience. Every patient should be carefully palpated. The beginner will many times be completely baffled, but by constant practice with intelligent thought of the problem in hand, steady and marked improvement will come.

About four weeks before the expected date of delivery, it may be in some cases a little earlier or later, careful palpation of the abdomen should be done. It is my custom usually to see the patients for this purpose in their own homes. They should be undressed lying down in bed. The abdomen should be bared from ensiform to pubes. The physician stands or sits on one side of the bed or the other, facing the patient. Usually I elect to be at the patient's right. The hands, warm and clean, are then put on either side of the abdomen, palms downward, fingers slightly separated and flexed. The hands are now gently rolled over the abdomen slowly and deliberately with but slight pressure. One very soon begins to appreciate the differences in the resistance beneath the abdomen. A smooth, firm mass on the one side with slight irregularities

on the other, means necessarily a back, and the small parts opposite. With a back on the left, the position necessarily becomes a left one.

For the second manœuvre, or grip as the English call it, the hands are moved up to the fundus — surrounding it, cupping it, the finger tips towards the middle line and then the outline of what is at the fundus made out. The breech runs into the back which has already been determined and it moves with the back, *i.e.*, there seems to be a definite continuity. If the head is in the fundus it moves slightly without motion in the back. The head is hard and more round than the buttocks. If it is the head, ballotment can usually be obtained which cannot be obtained with the breech. Ballotment is obtained by sudden tapping or pushing the part in the fundus downward and then quickly taking off all pressure and with the fingers yet on the abdomen waiting to see if the part is felt to rise beneath the finger tips.

For the third grip the thumb and middle and forefingers of the right hand seize whatever is just above the pubes and by gentle side-to-side motion one determines whether it is firmly fixed in the pelvic brim or whether it is freely movable at the brim. The contour of the part is soon appreciated and whether it is a head or a breech may be determined.

For the fourth grip the physician turns about and faces the patient's feet and with the three middle fingers of each hand on each side of the presenting part he forces them downward along this part and then notices the relationship of the fingers of the left hand to those of the right. (For a specific example take Case 13, page 75, also page 109.)

If we find by palpation that the presentation is vertex and the head well engaged in the pelvis all worry about the inlet of the pelvis is over and the outlet alone remains to be determined. If, however, we find the presenting part freely movable a month to two weeks from labor the size of the inlet must also be determined and that is best done by a vaginal examination.

From these manœuvres a physician may learn much about the fetus. The beginner will make many mistakes. No one can palpate too often, for from each case something new

may be learned. Gradually, as one becomes proficient the size of the fetus may be closely estimated. This is the important point, — to be able to estimate accurately the size of the fetus that has to pass through the given pelvis. If the presentation is a vertex the relation of the baby to the pelvis may be fairly accurately surmised, but if the breech presents, the relation of the head is much more difficult to determine and the liability of error is much increased.

During palpation of the abdomen fetal motion very probably has been obtained and this is proof positive that the child is alive. Before proceeding to any further examination of the patient, listen to the fetal heart and count accurately its rate and record it, for if you know what it is before labor it may help you much during labor. (Case 16.) In left positions and a vertex presenting the fetal heart is usually best heard in the left lower quadrant and in the right lower quadrant in right positions. If the breech is presenting the fetal heart usually is above the umbilicus to one side or the other as the position may be. The position, however, is never determined by the location of the fetal heart alone. The fetal heart is located in order to follow the child's condition, never to settle its position in utero.

A vaginal examination is now made to examine the pelvic cavity and the outlet of the pelvis. If the presenting part is not already in the pelvis an examination of the inlet is made. For this examination the patient is best placed across the bed, buttocks at the edge of the bed with legs flexed, feet resting on a chair placed directly in front of the patient. If this examination is made within a month of the expected labor the vulva must be carefully scrubbed up. The examining hand, usually the left, should be clean and a sterile glove worn. No lubricant is necessary and it may be said in making any vaginal examination a lubricant is totally unnecessary. In making this examination certain conditions are to be noted and it is best for the beginner to follow some one method so that all necessary points may be covered. The following scheme has worked well in my hands:

1. The size of the introitus, and the amount of secretion and its character.

2. The condition of the perineum, whether it is rigid or soft; the presence or absence of tears.
3. The position, size, shape and consistency of the cervix.
4. Whether the presenting part is in the pelvis or not. This point has already been determined by the fourth manœuvre in palpating and the findings are now simply confirmed. The height of the presenting part is noted.
5. If the presenting part is not in the pelvis an attempt is made to reach the promontory of the sacrum. Before one attempts this the patient should know that he may hurt her and she will in the majority of cases not flinch. This measurement is by no means easy to obtain accurately unless the patient is under ether. It usually is a negative finding, that is, the promontory is not reached. The method of taking it is to insert the index and middle fingers of the left hand as far upward as one can reach with the hope that the middle finger will reach the promontory. If it does, then the point on the index finger between the thumb and index finger which is directly under the symphysis is held with the right hand and this distance (from the tip of the middle finger to this point) measured. If this measurement is taken it is best not to do it until the last, after all the other points enumerated below are noted; otherwise, it will necessitate making a second unnecessary examination.
6. The contour of the inlet is palpated. No one can teach the interpretation of what is felt; it comes with experience. One palpates many normal inlets and when an abnormal inlet is found one has trained himself so well that one appreciates any difference.
7. The contour of the pelvic walls and the spines of the ischia. The interpretation of these points comes also by experience and is difficult to write about. In practically all cases can the spines be palpated and when they are very prominent it is very suggestive that the head may be held up there at delivery and a forceps operation be necessary.
8. The amount of motion present in the coccyx. Case 17 is a good example of where the coccyx gave difficulty in the delivery.
9. The condition of the rectum, whether it is full or empty.
10. The height, thickness and inclination of the symphysis is important.

If the presenting part is not engaged and is a vertex, before the fingers are withdrawn from the vagina seize the head between the thumb and forefinger of the right hand and attempt to push it down gradually into the pelvis. With the internal fingers note how low the head comes down and at the same time place the thumb of the left hand at the symphysis and note whether there is any overriding of the head at the symphysis. I shall take this point up again, later, in relation to contracted pelves but it is a point which should be carefully carried out whether there is any contraction present or not.

11. The fingers are now withdrawn and the angle of the symphysis determined. This is best measured by placing the tips of the thumbs together at the middle of the angle and letting the inner surface of the thumbs lie along the descending rami of the pubes. In this way one can see very readily what the angle of the symphysis is.
12. The bis-ischial diameter is measured last. For this purpose Williams's pelvimeter is very useful. If you have not made yourself familiar with its use you can make yourself efficient by knowing the size of your own closed fist. Place the closed fist between the ischial tuberosities; by a rocking motion one very readily comes to estimate quite accurately whether the outlet is contracted or not.

The Physician's Outfit.

The physician's outfit for obstetric work varies; from an outfit which I saw some years ago consisting of an old pair of forceps with wooden handles, a rusty pair of scissors, and an empty ergot bottle, to what the obstetric specialist of to-day carries, which makes it possible for him to do most of the major obstetrical operations. The necessary instruments, however, are as follows:

A pair of Simpson forceps with axis traction rods.
Four hemostats.
One smooth forceps.
One rat-tooth forceps.
One pair of scissors.
One needle holder.
Perineal and cervix needles.

Two French hooks.
Intra-uterine douche nozzle.
Silk worm gut.
Safety razor.
Catgut of assorted sizes, plain and chromicized.
Bobbin.
Two pairs of rubber gloves.

All physicians know that in many cases the number of instruments they will use in a normal delivery may be few, but there is no physician who can foretell what case is going to be normal or when a serious complication may occur. For that reason every man who wishes to be regarded as doing obstetrics well must carry enough instruments with him so that he can deal intelligently with all of the ordinary emergencies.

For the physician's own convenience a small copper sterilizer of sufficient length and height to hold the forceps should be in his bag, for in many houses one cannot find a vessel of sufficient length to hold the forceps unless it be so large that much time is consumed in boiling the water it contains. In this the instruments are boiled just before needed and left in it until used. Any obstetric case may have a severe hemorrhage, therefore a subpectoral needle or an intravenous cannula, with the necessary rubber tubing connections, funnel or a douche bag, and salt solution tablets, must be in the bag. In more recent years I have carried a salt solution outfit which various surgical supply houses now have for rental at a nominal price. This outfit contains a flask of two quarts of sterile salt solution, with rubber tubing and a sterilized subpectoral needle, all contained in a wooden box, making transportation easy and safe. Besides the above instruments the following articles are necessary:

One large rubber apron.
Nail brush.
Mouth gag.
Rectal tube.
Hypodermic syringe.
Ether.
Leg holder.
Alcohol, 70%, one quart.

I further carry on all cases the following sterile goods:

A gown with long sleeves.
A sheet.
A package of half a dozen towels.

At least two packages of gauze sponges, 4 inches by 2 inches, and a five-yard strip of gauze uncut, for packing the uterus.

If the patient can afford it have her nurse order these sterile goods from a supply house. What are soiled are sent back dirty and a charge is made. For what is not used credit is allowed. Other sterile goods are needed but they will be referred to later in the mother's outfit.

The drugs that are necessary are:

Corrosive sublimate tablets of the usual strength, one tablet to a pint of water making 1–1000 solution.

Ampoules of aseptic ergot, for subcutaneous use.

Ampoules of pituitrin or hypophysin.

Hypodermic tablets of strychnia and morphia of varying strengths, and what other stimulating drugs you believe in.

I have purposely omitted in this list the Kelly pad, for I firmly believe it is a source of infection and a bed pad that can be made up before the onset of labor by the patient or by the nurse serves the purpose as well and is many times more clean.

For the physician who goes to an obstetric case with only a pair of dirty hands this list is a formidable one, but no physician who is conscientiously trying to do good obstetrics can afford to carry any less. He may have to use, as we all know, but a few things in the above list. He may have to use them all and if he has not them with him when he needs them there is no time to send for them. He will be grossly negligent if he does not carry with him everything that he can possibly need. The slipshod manner in which some physicians manage an obstetric case is nothing short of criminal and it will be a relatively short time before the laity are educated to the point where a physician must be as prepared to manage an obstetric complication as a surgeon is to meet a surgical emergency. If a physician poses as a consultant in obstetrics he must add to the above list a cranioclast, a mechanical dilator, a blunt hook, and a set of rubber dilating bags with an eight-ounce metal syringe to fill them. Besides this list I carry a ribbon retractor and a large size Sims' speculum, both of which have been very useful

more than once in repairing lacerations. This list is adequate except for a Cæsarean section or a pubiotomy. I strongly advise physicians to have their own instruments and use only their own and not rely on those of other physicians or of the hospital where they may occasionally operate.

The Mother's Outfit.

The patient will ask what are the necessary things to have in readiness for her approaching confinement. You must know them, and you must not be extravagant but you must have the things you need. The following list is one that has proved satisfactory to me for some years. There is no question but that you can do obstetrics and do it aseptically without any such list as this. What will be bought will depend entirely upon how much money the patient has to spend. You cannot do obstetrics well unless you are clean; that is certain. Many things in this list are a pleasure to have on an obstetric case, but a patient will make a perfectly good convalescence without them:

Alcohol, 1 quart (95%).
Boric acid crystals, ¼ lb.
Tr. green soap, 8 oz.
Squibbs ether, 2 (½ lb.) cans.
Lanoline, 1 tube.
Vaseline (white).
Absorbent cotton (2 lbs.).
Glass drinking tubes (2).
Nail brushes, 2 (5 cents each).
Orange wood sticks (2).
Enamel basins (2), 11 inches in diameter.
Enamel basin (1), 18 inches in diameter.
Pails with covers (2).
Douche pan.
Fountain syringe (2 quarts).
Hot water bottle.
Rubber sheeting to cover bed.
Rubber sheeting, 1 yd. square.
Safety pins, 4 doz. size 4
Safety pins, 2 doz. size 0
Some way of heating drinks at night.
Old blanket.
Old linen and cotton.
Paper bags.
4 binders 18 by 45 inches (6 yds. unbleached cotton).
Tape, ½-in. wide, one roll.
1 pr. white stockings.

Sterile Goods.

Sterile obstetrical package.
2 packages towels (6 in package).

Explanations are needed for this list. I ask for crystals of boric acid rather than the powder because a saturated solution can be made up very much more readily from the crystals than from the powder. If you believe in having chloroform on an obstetric case rather than ether you ask for the chloroform. The recent work on delayed chloroform poisoning aside from the danger, has made many give it up entirely. If the patient does not wish to buy the enamel basins, basins in her household can be used, provided they are carefully cleaned and sterilized before use. The pails with covers are used after the delivery for the baby's napkins. A douche-pan is as satisfactory as a bed-pan and can be used on occasions after the delivery, more readily than can a bed-pan. Two sizes of safety pins are necessary and what kind you get is immaterial as long as they do not bend and will go through the diapers and the binders. The nurse will appreciate some way of heating the drinks at night that will obviate going down two or three flights of stairs to the kitchen. The old linen and cotton are used for the baby and for the mother. For the mother linen squares of two inches are cut to put over the nipples and to keep the lanoline on them. Immediately after birth, linen is put beneath the baby's buttocks in order to catch the meconium. The paper bags are asked for so that the nurse can drop the soiled pads into the bags and then carry them down to the furnace to be burned. If you ask your patient to buy six yards of unbleached cotton it can be cut into four binders eighteen by forty-five inches. These binders should not be hemmed. The tape is used for tying up the patient's night-dress in order to keep it away from the vulva at the time of delivery and the white stockings take the place of the obstetrical leggings so many physicians use. The surgical supply houses in Boston put up two sterile obstetrical packages. The first is the smaller and costs four dollars and the second costs six. This second larger package is the more satisfactory one for the patient to order and contains one bed pad 36 by 27 inches, lined with rubber sheeting. The rubber sheeting can be taken out after the delivery is over and used in the baby's crib, doing away with the necessity

of buying extra rubber sheeting; four dozen small sterile pads; one swathe; six dozen sponges, three inches square; two papers of safety pins; several pieces of linen bobbin; two dressings for the cord; four large pads, six by eighteen inches. These latter are used immediately after the delivery. There recently has been added one sterile gauze roller bandage three inches wide to be used for uterine packing. This package sterilized comes sealed in a paper box and is left unopened until the labor has begun. It should be in the house a month before the delivery is expected. If it is in the house longer than a month it is advisable to send it back and have it re-sterilized. This the supply houses do for a nominal sum when a package has been kept over a month.

Preparations for Delivery.

The choice of the room in which the patient is to be has usually been made many weeks before the onset of labor. The usual advice given in all text books that the lying-in room should have a sunny exposure, a fireplace and quiet is all excellent, but in these days of apartment life in the city many times it is out of the question. There is absolutely no choice.

There is no need of stripping the room of its usual furniture. Unnecessary articles of furniture must be taken out and sufficient amount of room must be obtained to move about in comfortably. A single bed is desirable but in many cases a double bed is the one that is present. It must be so situated that both sides can be easily approached. If it is a low bed, it is most convenient for the delivery to have it raised up on blocks, eight inches high. These blocks at the present time, in Boston, can be hired for a nominal sum from the various surgical supply houses. They make it very much easier at the time of delivery, especially if it is an operative or a breech delivery. The nurse, after the delivery is over, appreciates a high bed more than anyone else. If the bed is a double bed and has a tendency to sag down in the middle, a leaf from the dining-room table can be put beneath the mattress to prevent this sagging.

It is important for the physician to know the arrangement of the bed for the delivery. If it is an emergency case and the nurse has not arrived it is his duty to see that the bed is properly protected. Over the mattress should be placed a rubber sheet. If the rubber sheet is not large enough to go over the entire mattress then it must be so placed as to be underneath the patient at the time of delivery. Over this rubber sheet comes the usual linen sheet and on top of this linen sheet is placed a sheet in which is encased one-half a rubber sheet. This last sheet is placed hanging over the right-hand edge of the bed at the point where the delivery is to take place. If it is long enough to go across the entire width of the bed well and good; if it is not it must be pinned so that it will cover the bed at the most advantageous point. This upper half sheet when the delivery is over is loosened and is then rolled away and in its stead is placed another draw-sheet. Whether you have a piece of rubber within this sheet or not depends upon whether an extra piece of rubber sheeting has been asked for. Usually it is unnecessary, for a small bed-pad can be put directly beneath the patient. The bedclothes should be carefully drawn down and folded neatly at the foot of the bed. Care must be taken especially in the delivery that no unnecessary soiling of bedclothes, blankets or the furniture takes place. The floor in the immediate vicinity of the bed must be suitably covered to prevent staining, and beneath the bed, where the delivery is to be, a basin or small foot-tub is placed to catch any excess of flow or any of the douche-water if a douche is used.

Small tables are convenient to have for the instruments and the solutions but they are not essential and if they cannot be obtained chairs may be used. Physicians must be careful to cover whatever they use so well that no damage can be done. Usually, I place on the left-hand table my sterile goods and instruments and on the right-hand table the large basin or pail of sterile water or corrosive sublimate 1–3000. I put my sterile goods and instruments at the left, that is, towards the head of the bed, so that the patient may not in an unguarded moment kick

them over. This arrangement is for a normal delivery with the patient on her left side, but in an operative delivery with the patient on her back it makes little or no difference on which side the instruments are placed, the physician being guided simply by his own convenience. Within reach, the nurse has a small basin for the reception of the placenta and if this is not at hand it is not unreasonable to put the placenta after it has been inspected into the basin beneath the bed. The objection to this, of course, is that the nurse later has to pull it out from an unpleasant mess of blood and water. The use of a small basin does away with that.

In the room, if the bathroom is not connected with it, should be a pail of hot water in order to resuscitate the baby. Further explanation of resuscitating the baby will be given in the section on the baby, page 478. The ergot, the hypodermic needle, and the necessary stimulants must be at hand. The sterile goods are placed on the table, but are not opened until just before there is need of them. I have spoken several times of sterile goods. I suppose the majority of patients are not delivered with sterile goods, but that is no reason why we should not have them. If the patient cannot afford to buy sterile goods from a surgical supply house or if there is no nurse on the case to put them up, there is no reason why the physician, if he is on the case even but a short time, should not boil half a dozen towels thoroughly and have them ready for use at the time of the delivery. They are not as comfortable for the patient as dry sterile towels, but they are much better than nothing. The preparations for the delivery are many and in a multipara, where the labor may be very rapid, the nurse's ingenuity and brain are taxed severely and unless the physician knows what is essential, many times nothing will be right.

Whether the patient should have a full tub bath depends upon her own cleanliness. Further than that it depends upon how active a labor she is in and how much dilated the os uteri is. It is a good routine rule that all patients at the very beginning of labor, unless the membranes are ruptured, should have a full tub bath. After the bath is given, the vulval hair must be shaved. I am confident that shaving is

a necessity. I have never yet had any objection raised to it. Patients have been sometimes surprised that I should ask to have it done but they have never refused. If there is ever any objection it is a simple matter to explain to them that because of the amount of lochia that will be present after the delivery their comfort will be much increased, and this will be especially true if any stitches are necessary. I do not ask the nurse to take off all the pubic hair but I do insist that the lower vulval hair be shaved. Unless the nurse is expert in the use of the ordinary razor she had much better use the safety razor and thereby avoid all possibility of cutting the patient. Clipping I do not like for it oftentimes leaves many loose hairs about and if any operative procedure becomes necessary it is possible that hairs may be carried up into the uterus. After the vulva is shaved the patient is given an ordinary soapsuds enema in order to empty the lower bowel. The question of whether to give an enema to a patient when a doctor is not in the house is a real one, because it is a well-known fact that after enemata have been given, labors often start up very quickly. The nurse in Case 9 held off giving the enema until I was in the house for the reason that she was attending a multipara whom she did not want to start up in active labor until she knew that the physician was present, a perfectly justifiable procedure and one that is to be commended.

The patient's hair should be braided in two braids and if this is not carefully attended to it becomes badly tangled during the delivery and causes the nurse much trouble later and the patient a great deal of discomfort. The patient usually puts on an old night dress, one which may be torn if necessary and over this a wrapper is worn. At the beginning of labor there is no reason why she should not wear what she wishes. The question of allowing a nurse to make vaginal examination at this stage of labor I think allows of but one answer. No nurse in my opinion should be allowed to make a vaginal examination under any except the most extreme emergency. The only possible one I can think of is where she sees a prolapsed cord and pushes her fingers into the vagina in order to keep the head if possible away

from the pulsating cord, but it is a question if that cannot be done better by putting the patient in the knee-chest position than by having the nurse attempt to hold back the head. Vaginal douches of any kind during labor I do not use. It has been conclusively shown that more harm than good may come from them.

Unless there is some contra-indication the patients in the first stage of labor are allowed and urged to go about the room as much as they wish. The one chief contra-indication is ruptured membranes with the liquor freely coming away. The highly neurotic girl of the present day will often refuse to walk about at all, and from the first pain she will lie in bed and complain, while in the lower classes it is with difficulty even in the second stage that one can persuade some of these patients to go to bed. Recent immigrants quite often will insist up to the last on being up or some may even assume a squatting posture. As labor progresses, if the physician has not already put in an appearance, the nurse must watch the interval of pains, their character, how the uterus acts and whether it relaxes well. She should know the rate of the fetal heart, the patient's temperature and her pulse. If there is any one of these points that is abnormal she must notify the physician at once. As soon as he comes he must make himself familiar with these points. I have come to feel recently very differently in regard to the question of food for a patient in labor than I did some years ago. With a patient in slight labor there is every reason why she should have food, but with a patient in active labor, whether it is the first or the second stage, I do not believe it best to give that patient much, if any, food for the simple reason that I have so many times found the process of digestion arrested when active labor is present. This has been shown many times when an operative delivery has been necessary, by the patient vomiting the food that has been taken into her stomach six to twelve hours before the ether was given. For this reason I hold that giving patients food if they are in active labor, or if there is the probability that they are going to have an operative delivery, is wrong. One may answer this statement by saying that the patient needs

food, in order to carry out her muscular exertion. I agree to this most assuredly, but if it is not digested and absorbed what possible good can it do? It simply nauseates her and causes her a great deal of discomfort.

A patient in her first labor should be in bed when she becomes fully dilated at the latest. A multipara should not be allowed to go to the toilet after she is half dilated unless she be in very desultory labor, but a patient in her first labor may go until she is fully dilated, provided, however, she has no inclination to bear down. Many patients towards the end of the first stage may have the desire to move the bowels and care must be exercised to prevent any untoward disaster.

These preparations may seem to many practitioners almost ludicrous. I have proved their value in my own experience. Fortunately the time is fast passing when so low a standard for obstetrical work will be permitted as in the past. The physician who will not improve his standards will soon be without a practice.

Technique of Delivery.

Each physician will doubtless determine his own way of carrying on a delivery but there are certain fundamentals which must be thoroughly impressed upon the beginner. The first important point is the question of disinfection of the hands. The nails must be kept short and clean. Before each vaginal examination the hands must be scrubbed thoroughly, with a boiled nail brush or one kept in corrosive solution, for at least ten minutes. All parts of the hand must be scrubbed. Do not forget the interdigital spaces and the ulnar border. No rings are permitted on the hands. The hands are to be scrubbed in running water or in water that is changed at least two or three times. The soap is then washed off and the hands immersed in 70% alcohol for three minutes, carefully working the alcohol underneath the finger nails. Sterile gloves are then put on. For a vaginal examination there is no need of scrubbing up beyond the wrists, but for an operative delivery a thorough scrubbing must take place up to the elbows. In the preparation of the

patient for examination I have already spoken of her being shaved. She is now placed in position for examination which is either the dorsal or the left lateral., I prefer the left lateral because there is less exposure and because it is easier for the patient to maintain. If the back position is used the patient is put well on the edge of the bed, legs flexed, with her feet resting on a chair. If it is the lateral position, and it usually is the left lateral, the buttocks are brought to the edge of the bed and the trunk of the body is at *right angles* to the length of the bed. Her legs are flexed on the abdomen and in that way the vulva points directly outwards to the side of the bed. The vulva is now scrubbed with soap and water. Before this scrubbing the hands of the nurse or the physician, if he is alone, must be carefully washed. Care must be taken to scrub the vulva always downwards towards the anus and *never from the anus towards the vulva.* If the piece of cotton or gauze that is used touches the anal region it must be thrown away and not used a second time. Care must also be taken in patients who have a relaxed introitus not to use a great deal of water in washing and so let the dirty wash water run into the vagina. After the soap and water scrub, the vulva and adjoining parts are carefully washed off with corrosive solution 1–3000. It is unnecessary to scrub the patient's buttocks, and inner aspect of her thighs for under no circumstances should the examining fingers come in contact with these parts. The wider the field that the physician thinks is prepared the less careful may he be. The patient prepared for examination, and your hand disinfection done, you proceed to make the vaginal examination. Every examination should be made with sterile rubber gloves without holes. The use of gloves is a protection to the physician as well as to the patient, for more than one physician has become infected with syphilis by vaginal examinations.

If the patient is lying in the left lateral position, the examination is made with the right hand. With the left hand the right labium is drawn upward so that the fingers of the right hand can be inserted directly into the vagina. Nothing is to be touched but the mucous membrane of the vagina.

This is important, for at best the vulva and vagina never are surgically clean. If the perineum is tight, insertion of the fingers a little way and then pressure backwards, towards the anus, on the perineum will gain room and then the fingers can be inserted further. At this time if it is the first vaginal examination that has been made of the patient, the relation of the baby to the pelvis must be at once determined as already noted. (Page 94.) If the pelvis has been settled as ample, at this time the height of the presenting part, the amount of dilatation of the os uteri and its physical characteristics, whether the membranes are ruptured or not are the points to be determined. If possible, the relation of the saggital suture and the posterior fontanelle to the pelvis should be settled. At the beginning of labor the question of a contracted pelvis ought not to have to be settled unless it is a border line case where the patient is to have the test of labor. This brings up an entirely different problem which will be dealt with later. For the normal case examination of the pelvis should have been done as already said at least three weeks before the expected date of confinement. If the physician has not done this then he may fairly be accused of having neglected his patient. Honest mistakes we shall make, but negligence must not be permitted. The question will be raised, is any vaginal examination during labor permissible? Examinations not carried out carefully undoubtedly are dangerous to the patient, but if the above precautions are scrupulously followed the danger of infection is so slight that it may be disregarded. The more often examinations are made and the further along in labor the patient is the greater is the risk. One examination, I practically always make, in a few cases two, almost never, unless there is some complication, do I make three.

At each and every time a vaginal examination is made this same method of procedure must be carried out.

Make the first vaginal examination at the beginning of a pain. Be all scrubbed up and wait until the pain starts, then examine. By so doing, one readily tells whether the membranes bulge any and whether the presenting part descends. Another reason for making an examination during

the pain is that the examination may be painful and oftentimes the patient does not distinguish between the labor pain and the pain of the examination, supposing the added pain is merely a stronger contraction. An objection to examining at this time is that the novice may unintentionally rupture the membranes early in the labor, thereby making it a so-called "dry labor." The object of a vaginal examination in the first part of labor is to see that progress has taken place as shown by the dilatation of the os uteri. The advance the patient has made in the first few hours is the criterion of what we may expect her to do in the next hours provided she continues in the same type of labor. It has been said that the danger of making vaginal examinations is so great that they should be eliminated entirely and rectal examinations substituted. I have never had in my private work sepsis follow vaginal examinations carried out under this technique and for this reason I have never felt it necessary to give up vaginal examinations during labor and resort entirely to rectal examinations.

The beginner will not know how to interpret what he feels in his first vaginal examination and unless he is under the careful supervision of his instructors, grave errors may come. A not uncommon mistake is for him to push the examining fingers by the os uteri into the posterior cul-de-sac and then to separate the fingers widely and say that the patient is fully dilated when in reality he knows nothing of the dilatation. Text books may teach the student what he may expect to find, but experience in much practical work alone will make him proficient.

In the large majority of cases the physician should palpate the fetus and listen to its fetal heart before the vaginal examination is made. The same grips are used during the labor as were described in palpating in the preliminary examinations. By means of the fourth manœuvre the progress of the head is followed. To appreciate this progress the mechanism of labor must be thoroughly mastered. Descent and flexion go on usually hand in hand. A specific case will explain this point. In Case 9 (page 55) palpation showed the position to be O. L. A. and the head well flexed. The

steps in determining these facts were these. Firm, smooth resistance was felt on the patient's left and the small parts found on the right. The head was known to be flexed because by the fourth manœuvre the fingers of the left hand met resistance further down in the pelvis on the child's occiput than did the fingers of the right hand which were stopped relatively much higher up in the pelvis presumably by the chin. In other words, if a line were drawn from the tips of the fingers of the left hand to those of the right, the line would be upward and to the right. In right positions with the head well flexed the low point is on the right. When resistance is met on both sides at the same level then the supposition is that the head is slightly extended. If this extension goes further the normal mechanism is altered and a brow or face presentation is found and the low point in the line is reversed (page 353). In some cases the abdominal wall is so tight that nothing can accurately be determined and then for accuracy recourse must be had to vaginal examinations. In palpating the abdomen during labor one must note whether the uterus is relaxing well between the pains and whether it is contracting hard or whether any tenderness is appearing. The length of pains and the interval between pains must be carefully noted.

Careful inspection of the lower abdomen will show whether there is a full bladder present or not. This is shown by a round tumor mass in the midline rising up varying distances between the symphysis and the umbilicus. If this mass is percussed it is dull and on palpation it is resilient and at times tender. In Cases 41 and 42 it was readily seen. In both of these cases the patient was able to empty the bladder herself. When this is impossible the patient must be catheterized. (For technique see page 124.)

If the patient is in active labor but with the membranes unruptured the fetal heart need be listened to but once an hour, possibly once in two hours. When the membranes rupture, the fetal heart should be listened to at once. When the presenting part is not well engaged in the pelvis this is especially important. If it is regular and of the same rate as before the membranes ruptured, the probability is

that the cord has not prolapsed. If it is not heard, or is irregular, a vaginal examination must be made to be sure the umbilical cord has not prolapsed. In the course of a labor with membranes ruptured the fetal heart must be listened to at least every forty-five minutes. If any irregularity or steady rise in the rate is found the question of operative interference at once arises.

As the baby's condition is followed by its heart beat so is the mother's condition followed by her pulse. A steady rise in the maternal pulse is indicative of exhaustion. Examination of the case histories will show operative deliveries undertaken because of a rising pulse. A slight rise in temperature is not infrequent and is not always a proof of beginning sepsis. The temperature of the patient must always be taken at the beginning of labor for it may be of much diagnostic import in the puerperium.

The question will often be asked how can the busy general practitioner stay with a patient who is in only fair labor and watch all the points above enumerated. Many times he will think he cannot afford from a pecuniary point of view to spend what he has allowed himself to regard as wasteful watching. Unquestionably in many cases it is unneccesary for the physician to be in the house all of the time the patient is in labor but he must be where he can be readily reached. If this is impossible then it is his duty to stay with the patient until her labor is over. In rural communities this is where the value of the trained district nurse becomes so great.

One may write pages on the difference in the character of the first and second stages of labor pains. Practical work, however, will tell the beginner more than all that can be written. Here it is sufficient to say that the first stage pains are said to be nagging, bothersome, irritating, while in the second stage the pains, although harder, are better borne, oftentimes because of the feeling that the patient has that something is being accomplished. She oftentimes appreciates the progress that is being made and therefore accepts her condition more willingly.

Each physician will develop his own way for carrying on

the actual delivery. The following is one that has proved efficient many times. Reference to the cases will show the length of time for multiparous and primiparous labors. It is very variable and surprises because of the rapidity or the slowness of any given case are common. For this reason never allow yourself to say that a labor will be over within such and such a time. The liability of error is too great.

In studying the above cases it is seen that all were delivered in the left lateral position. Unquestionably to my mind it is the best; the one objection to it is that if you are alone with the patient it may be difficult for you to hold the patient in this position if she exercises little or no control over herself. But as the same objection holds in any other position in which the patient may be put this position still is the most satisfactory. The aseptic technique can be better carried out after the position is thoroughly understood than in any other way. There are two important points to be remembered, the patient's buttocks must be well on the edge of the bed with legs flexed, and the body must be at *right angles* to the length of the bed.

The preparation of the room, the bed and the patient have all been noted above.

As the second stage, the expulsion stage, begins, the patient is urged to bear down and use her abdominal muscles with each and every pain. Until the second stage begins, that is, until the completion of full dilatation, the patient must not be allowed to strain for if she does she simply tires herself out in trying to overcome the resistance of the undilated os uteri. Reference to the cases shows that if the membranes had not ruptured at or before full dilatation they now at full dilatation of the os were ruptured. With the gloved fingers it is difficult to rupture them and therefore a hemostat or a pair of rat-toothed forceps may be used. As the liquor comes away note whether it is the usual light color or stained with meconium.

The physician should be ready for the delivery in a multipara at the latest when she is two-thirds dilated. As a routine measure it is safer to be ready, at any rate for the beginner, from the time she is one-half dilated. For a pri-

mipara this is unnecessarily early, — here the first signs of bulging will give the physician sufficient time to scrub up, provided everything else is prepared.

The bed pad is placed under the patient. The progress of the head carefully watched by the amount of bulging. Keep your hand away from the introitus. Nothing is gained by constantly putting the fingers between the perineum and the head thereby hoping to help stretch the perineum. More damage may come than any possible good; with each pain the patient is urged to bear down, holding her breath and using her abdominal muscles to the best advantage.

By the time there is bulging of the perineum the sterile towels should be placed over the patient, one beneath her and one above on the upper buttock — placed lengthwise, the lower edge coming just above the upper labium. Have the third towel which is to cover the anus at hand but do not put it on, because one wishes to see the anus so that if any feces should be forced down by the oncoming head it can be wiped away at once. Again remember the caution above given, never to wipe toward the vulva, always toward the anus and then throw the piece of gauze away at once.

In many books you will read descriptions of supporting the perineum to prevent lacerations. The term is a misnomer for the best way to prevent lacerations of the perineum is to keep from it all pressure from the outside. As the head comes in sight and the actual delivery is about to begin the physician sits directly in front of the vulva with the instruments and solutions on either side as already explained. With each pain the head will gradually advance. Pressure on the baby's scalp by the fingers of the right hand will indicate its condition. Pressure blanches the point pressed upon and as the fingers are removed the circulation is seen to return provided the baby's condition is good. If there is no change when the pressure is removed the child's condition is grave and the delivery must be hurried (Case 13). With each advance of the head when the pain ceases there is a corresponding recession. Gradually the perineum becomes so stretched that it is safe to hold the head at the point to which it has advanced, and this is done by placing over the anus

the third towel one end of which lies on the upper buttock, over the first mentioned towel. Then press the fingers of the left hand in behind the anus to catch the oncoming chin. By the presence of this towel the left hand is not soiled. If the advance becomes too rapid, and it not infrequently does, the head is held back by the right hand. The tips of the four fingers and the thumb are placed together on the fetal head and firm pressure made against it. The amount of resistance given to the head is governed by the speed with which it is safe to let the brow and face come over the perineum. Experience alone can tell you. The more experience you have the slower will be this stage in the delivery. If you are unable to keep back the head by the pressure of the fingers let the elbow point of this arm (the right) drop down to the inner side of the right thigh, just above the knee, and by this manoeuvre you gain the added strength of the adductor muscles of the right leg which is not inconsiderable.

With the head as far advanced as it now is the patient should have had everything which she may have been pulling on taken away and she should begin to breathe quickly with the mouth wide open,— to pant. By this means her abdominal muscles are stopped working and the uterus alone expels the baby. With the left hand behind the anus holding the chin and the right hand stopping all advance you have the head within your control to deliver it when you are prepared. The head should always be delivered in the interval between the pains, never as the pain is coming on for the liability to a severe laceration of the perineum is thus greatly increased. The occiput must be kept close to the symphysis and as much pressure as possible kept from the perineum. Gradually, the brow, eyes, nose, mouth and chin appear in turn and as the chin is born the whole head drops backward towards the anus and as it does this, with the left hand the edge of the third towel is slipped beneath it to prevent it touching the anus. If the perineum is tight, room may be gained by rotating the head a few degrees the way it is going to restitute so that the nose and chin are delivered a little off the middle line.

The moment the head is born it turns either towards the right or left of the patient's pelvis depending upon the position in which the fetus was. This first turning is called restitution, in other words, the head at once turns so that it comes to be in its accustomed relation to the shoulders, the saggital suture of the head lying at right angles to the bisacromial diameter of the shoulders.

The head delivered, the mouth at once is quickly, but gently wiped out. The cord is felt for about the neck and then the eyes wiped off with sterile gauze or with sterile gauze moistened in boric acid solution, 4%. Be in no hurry to deliver the shoulders unless the baby is in poor condition. If the cord is about the neck try first to pull it down and slip it over the head, if this is impossible, as the shoulders are born slip it over the one or the other. Occasionally neither of these procedures can be done and then you must put on quickly two hemostats and cut the cord between them. (Case 9.) One hemostat is not sufficient, for you cannot tell whether you will cut on the fetal or on the maternal side of where the one snap was placed.

If the head is watched carefully after restitution takes place, it is seen to turn still more in the same direction with the next pain. This further turning is called external rotation, or a better name for it is internal rotation of the shoulders. By this mechanism the anterior shoulder comes to the arch of the symphysis and then is born. I frankly cannot say which shoulder should be delivered first; generally it is the anterior, sometimes the posterior, and it makes no essential difference. It is certain, however, that both should not come at the same time for an unnecessary amount of pressure is put on the perineum. Let whichever one comes the more easily come down. If any traction is necessary let it be slow and deliberate, never a quick sudden motion. If the anterior shoulder comes first then draw it upwards towards the symphysis thereby taking as much pressure as is possible off the perineum. Many little points will be apparent to the careful physician which he can make use of as he becomes thoroughly familiar with the numerous problems with which he must deal. As the shoulders are

born, the body follows and bends laterally, — lateral flexion, — away from the physician, again keeping as much pressure as possible from the perineum. The right hand supports the head and shoulders, and as the body follows the left slips down along the buttocks and the ankles are caught. Grasping both legs at the malleoli, the middle finger of the left hand between the two ankles, the index and ring fingers around the two external malleoli, the baby is held up by the feet and drained. The head is grasped and extended in order to straighten the trachea. Sometimes the head may be gently shaken to clear the mucus. The little finger is then passed into the mouth and hooked about in order to get out any mucus which may be resting in the mouth. While the baby is draining feel the cord for pulsations. At this time the baby practically always cries; if it does not the problem of resuscitation arises and this will be taken up later (page 478).

Provided the mother and baby both are in good condition wait until the cord stops pulsating before you tie it. The blood in the cord and placenta belongs to the baby and series of cases have shown that babies who obtain this blood do better than the ones who do not. If either is in poor condition snap the cord with a hemostat and cut at once. Wait until conditions are such that you may put the ties on the cord. The method of tying the cord is important and I know of none better than the usual one, provided it is carried out carefully. The bobbin which must be sterile is placed half an inch from the umbilicus and half a square knot made. The ends are held in the hands, across the palms, between the thumbs and index fingers, the thumbs then are brought together and with an outward rotation of the wrists the first half of the knot is sunk home and then the second half is tied in the same manner. The reason for this is that if one hand slips the other does not pull away with the other end of the bobbin and tear the cord from the abdomen. Unless this precaution is taken this accident may take place as I have seen it. Always place a second tie in a similar manner half an inch beyond the first and then the cord is cut just beyond this second tie. After it is cut sponge with

sterile gauze the cut end and watch it for a few moments to see that there is no bleeding. The baby, in a sterile towel, is then put in a safe and warm place to be attended to later.

The nurse's position at the delivery is sitting on the bed facing the patient, just in front of her. In this position the nurse can readily follow down the uterus, as the baby is born, with her right hand and can also watch the mother's pulse. Just before the head is delivered the nurse places her right hand on the fundus and keeps it there during the remainder of the delivery. She uses no force unless requested to. The reason for her following down the uterus in this way is that she then has the fundus in her grip at the beginning of the third stage. If she holds the uterus well from the time the baby is born until the placenta comes away there is little or no danger of an internal concealed hemorrhage taking place. She takes notice of the size of the uterus the moment the baby is born, and if she is keen she will notice and report any enlargement.

If you are alone with the patient grasp the fundus yourself and then put the patient's hand on it and tell her to keep her hand where you put it. If she will not or cannot, at frequent intervals feel of the fundus yourself and make sure it is remaining hard. Remember if you do have to grasp the fundus you must prepare your hands again for the delivery of the placenta. At this time take the patient's pulse; accurate observation of it at this time may save much worry later.

The baby born, the third stage begins. The patient now slowly rolls over on her back from the left to the right, her legs steadied by the nurse or some friend, or resting on a chair. If there is no bleeding and the patient's condition is good there is no indication to hurry the delivery of the placenta. The reason for changing to the dorsal position at this time is that a more careful inspection of the perineum may be given with the patient in this position. Also there is less soiling of the bed and the uterus can be held to much better advantage. A good routine rule in the delivery of the placenta is to wait for six contractions, or a half hour, before any attempt is made to express it, provided of course that there is

no absolute indication to deliver it. When the placenta is delivered it must be inspected to see that it is intact and that all the membranes are present. This is done by holding the placenta in the palms of the hands maternal surface upwards. By approximating the various cotyledons one at once sees whether they make a complete placenta. The membranes are then stretched out and if they form a bag with only a small rent you may be reasonably sure they are all present.

In the majority of cases the fetal surface of the placenta appears first at the vulva. It is grasped first by one or both hands and gently drawn out of the vagina. Do not let it come quickly for the membranes may tear with the result that some may be left in the uterus. The placenta is rotated to the left or to the right in order to twist the membranes into a cord and they then are gradually drawn out. If the membranes hold, put a snap on them at the introitus and continue to twist them and at the same time pull them gently out. If but little comes place another snap higher up on the membranes and continue twisting and pulling very gently. Gradually more and more of the membranes come down and finally the end comes trailing out. Occasionally if the uterus is held down too tightly by the nurse one will tear the membranes if one is not careful; in such cases ask the nurse to let go of the uterus entirely for a moment or ask the patient to cough. Slight traction at the same time on the twisted membranes will usually bring them away complete.

If you find that all the membranes have not been obtained and some parts remain in the uterus do not go up after them at once unless there is hemorrhage. In by far the large majority of cases they will be discharged in the lochia and no symptoms arise. (Case 12.) If there is hemorrhage the uterus must be cleaned out, either by a finger curettage, or the curette, or the cavity of the uterus wiped out with sterile gauze. Rarely the uterine cavity will have to be packed. The third stage ends with the delivery of the placenta and the puerperium then begins.

The perineum must be carefully inspected. The labia are separated and the vagina carefully and gently sponged. If

a slight tear is found the stitches may be placed while you are waiting for the placenta, and after it comes away they are tied. The majority of tears are sewn up without ether if they are sewn at all. Every tear no matter how slight, should be repaired, using chromicized catgut for internal tears and silk worm gut for external tears. Never act as a physician recently told me that he did. He said he could not afford to put in "stitches" as the older men in the community where he practised never sewed up any of their cases and should he get the reputation of putting in "stitches" he would get no work! If the tear is a bad one the patient should be etherized and a careful repair done. In the various cases the technique of repairing the perineum is described.

After the placenta is delivered the patient is cleaned up. One must be careful as in the scrubbing up never to wipe towards the vulva. A douche must not be given. The patient is now rolled back into bed and made comfortable. She must keep as nearly flat as is possible with legs extended. If there is a nurse with you it is her duty to follow carefully the pulse and if there is a rise in rate she must tell you at once. If you are alone take it the moment the patient is put back in bed. The nurse also should hold the uterus. She has followed down the uterus as the baby is delivered and has kept her hand on it during the third stage. The only time that it is not held is when the patient is being rolled over from the left side to the back position for the delivery of the placenta and inspection of the perineum. The nurse at this time changes her position and comes and sits on the patient's left so she can again grasp the uterus with her right hand. If the uterus is not acting well and by acting well one means staying well contracted, the physician grasps the fundus as the patient's position is changed. Again let me repeat that he must wash up his hands again before the delivery of the placenta or else change his gloves. This is the reason for having two pairs of gloves sterilized for every delivery in order to have a clean pair for the delivery of the placenta and the repair, if necessary, of the perineum. In holding the uterus the four fingers should be behind the uterus, the palm over the fundus and the thumb anterior,

pointing to the symphysis. There is no necessity of hurting patients in holding the uterus; no sudden motions must be used. If the uterus does not contract well gentle manipulation of the fundus between the fingers and thumb will many times bring good contractions. Management of the uterus which does not act well will be taken up under post-partum hemorrhage (pages 76 and 233). The use of ergot as a routine measure after the placenta has been delivered is unnecessary. Ergot must never be given until the placenta is delivered because of the danger of shutting down the uterus on the placenta, making its delivery most difficult and sometimes dangerous. (See Case 37A, where ergot was given before the placenta was delivered.) If the physician for any legitimate reason cannot stay with the patient for two hours after the completion of the third stage and there is no competent nurse in charge, a dram of ergot may be given as a precautionary measure. Care must be used to obtain an active preparation of ergot for it is well known that ergot deteriorates with age.

The uterus is held until it stays well contracted. This may mean not at all or for some hours. In a certain few cases, especially in multiparæ the uterus will act poorly and careful attention must be given it or a severe post-partum hemorrhage may result. Immediately after the delivery is completed and the patient is back in bed there are three points which must be carefully determined. First, the pulse, second, the action of the uterus, third, the amount of flowing that is present. The pulse should drop in rate immediately after the delivery and unless you have followed it carefully through the delivery you will not know whether it is dropping or rising. A rising pulse rate is a danger signal and its cause must at once be found out. The action of the uterus has already been spoken of. The flowing varies considerably in amount but if the pulse drops in rate or remains of the same rate and volume no anxiety need be felt.

With a dropping pulse rate and a good uterus the abdominal binder may be put on at once. But with reversed conditions it is never to be put on. The binder should reach from just above the trochanters to just below the ribs. A firm smooth binder adds much to the patient's comfort. It

relieves the sense of emptiness that so many patients speak of at once after delivery. It cannot in the first few days of the puerperium cause a retroversion. Before the binder is put on let the patient try to void her urine. If she is successful before the bladder has had time to become distended the probability is that she will have no difficulty later. The vulva pad is pinned to the back of the binder over the sacrum and to the front over the symphysis. After the patient's swathe is applied the patient's temperature and pulse should be taken. She then should be given before she quiets down for sleep a cup of broth, hot milk or cocoa. She has done a great deal of work and she needs not only food but sleep. The question of an early sleep is important because of the hard work and oftentimes the loss of sleep. The room that the patient is in must be darkened and the whole household must be kept quiet. When the patient has been made comfortable the nurse then turns her attention to the baby. (See page 477.)

The Puerperium.

The temperature and pulse of every puerperal case, provided a nurse is on the case, should be taken every four hours until the milk is well established and from then on twice a day until the patient is up. If you have no nurse to look after your patient make it a point to make the visit on the second and third days in the mid-afternoon, because if the patient is to have any temperature she will much more likely have it in the afternoon than in the morning. If one's work is so arranged that it is impossible to see the patient in the afternoon one can always leave a thermometer in the house and let her take her own temperature and in that way one can early discover any rise in temperature. An initial rise of temperature immediately after a delivery is so common that one thinks nothing of it. A temperature of 102° within six hours after delivery is not unusual and a temperature of 100° is very common. It has no significance and without doubt it will drop to normal within twelve hours. The temperature must be kept accurately. There ought never to be a continued temperature of over 100° in a puerperal patient.

The British Medical Association records cases as showing a puerperal morbidity in which the temperature exceeds 100° F., in two successive bi-daily readings from the end of the first day to the eighth day after delivery.

The pulse rate to me is far more important than the temperature. Immediately after the delivery in all cases there should be an initial drop in the pulse rate. It may come down to 45–50 and then gradually as the heart becomes rested rise to its usual rate. A rising pulse in the puerperium one can always regard as a danger signal. The rising pulse oftentimes shows the presence of trouble sooner than anything else. By an accurate pulse chart one can tell a great deal better about the patient's condition than by any other one sign.

Shortly after the delivery a post-partum chill may occur. It is very common and has no significance. It may be of nervous origin or due to the alteration in the circulation or to the loss of heat of the baby. The treatment indicated is simply to put heaters and more blankets about the patient and to assure her that the chill will cease very shortly and is nothing to be alarmed about. It may be so severe that morphia may have to be given. (Page 174.)

The question of food in the puerperium is an important one. Immediately after the delivery, as I have already said, liquids of some sort must be given because of the hard work the patient has done. For the first twenty-four hours soft solids, toast, milk, dropped egg, cereals, etc., may be given. After the bowels move there is no reason why, unless there is some positive contra-indication, the patient should not go on to the regular diet that the family is having, but while she is in bed it must be remembered that she does not need such a full diet as if she were up and around doing her routine work. One thing must be remembered, do not let the nurse or the friends of the patient begin to cut her off from one thing after another because they are afraid this or that will upset the baby. The patient can eat anything that she wants except the things which she, herself, knows upset her when she is up and around. A good generous mixed diet is the best for making milk. Her bowels must move by the

third day unless she has a severe tear and you plan to stop the bowels from moving for some days. As is seen in the above cases, I practically always use castor oil, three-quarters of an ounce to one ounce. There is no cathartic that clears the intestinal tract so well for the first movement as castor oil. It must not be continued. One dose only is given. From then on the patient must have one movement a day. Whether she gets it by the use of enemata or by a mild cathartic is immaterial but I am firmly convinced that if the patient is relying on enemata alone she should have at least twice a week a mild cathartic by mouth. Some patients find that the use of suppositories is entirely satisfactory and the same remark holds true about the use of mild cathartics, if they are relying upon suppositories alone as upon enemata.

It is not unusual to find that a patient just delivered is unable to pass her urine. The abdomen, relieved of the pressure of the fetus, is very relaxed and as the bladder enlarges there is no sensation of fulness and the nurse soon finds that the patient has a full bladder. When the patient attempts to void she is unable to do so. The patient should early attempt to pass her urine and should not be allowed to go a long time without so doing. If a patient cannot void, sometimes, rarely in my experience, the sound of running water has helped her. Occasionally a hot sterile cloth applied to the vulva or hot sterile water poured over the vulva will be of aid. A hot sterile douche with a fine stream pointed directly at the meatus with the labia separated, the stream coming with some force, may help. I have had greater success in having a very large high hot enema given to the patient. When the enema comes away in almost every instance it will be found that the patient has passed her urine at the same time. The enema cannot be used if there have been severe lacerations. If none of these procedures proves of value, raise the patient up in bed supporting her in an upright position. (Case 41.) Patients then can usually pass their water. If all of these measures fail she must be catheterized. Catheterization is the last resort and should never be done until all these other measures have failed. Catheterizing a puerperal patient is a dangerous procedure. I

care not who it is that does it, it is oftentimes the beginning of a long cystitis. If the patient is to be catheterized, the catheterization is a surgical procedure and unless you are sure of your nurse you must do it yourself. Accept the responsibility yourself if there is an infection and do not put it on the nurse. The patient should be on her back with the legs flexed and the knees dropped outwards. You must see the meatus. Fortunately, the time has gone by when the patients are catheterized under the bedclothes. The vulva is carefully wiped off with corrosive sublimate 1–3000 and a pleget of sterile cotton soaked in 4% boracic acid solution is placed over the meatus. The nurse's hands are made surgically clean. The labia are separated with the fingers of the left hand and the meatus is in full view. With the right hand the catheter is gently inserted into the meatus without force, with a gentle sliding motion. If the catheter is inserted in the meatus there is no difficulty. It must not touch any point except the meatus. Whatever kind of a catheter is used, it must be thoroughly boiled just before use. I prefer in the puerperium a glass or a metal catheter. If the urine comes do not move the catheter. Let well enough alone. In removing the catheter the finger is put over the external end and the catheter then withdrawn. The unfortunate part about catheterization of a patient is that if it is once begun, in the majority of cases it has to be kept up.

A patient lying in bed should have a bath every day. How often the pads are changed depends entirely upon the amount and character of the lochia. The pads should be changed, however, at least four times a day. Of the various antiseptics that are used, corrosive sublimate, lysol, sulpho-napthol, the physician must determine himself. Personally, I do not care to have any used. Sterile water is sufficient. When the nurse is ready to clean the patient she washes her hands carefully, and whether she uses gloves or not depends entirely upon whether the patient has syphilis or gonorrhea. The nurse should always clean the vulva from above downwards and never in the opposite direction. Many nurses pour sterile water over the vulva. The advantage of this is that if the patient has not been shaved it causes her less pain.

The disadvantage of it is, that if the introitus is relaxed some of the wash water will go into the vagina. After the vulva is clean a sterile pad is put over the patient. Whether the patient is of the class that can afford to have sterilized pads or whether she simply makes up her own pads in the household and bakes them well in the oven or uses absorbent cotton soaked in corrosive sublimate 1–5000 makes no difference. She must have something over the vulva to absorb the discharges. If there is not a nurse on the case it is the duty of the physician to show the attendant how the pads may be put on without touching the surface which is to be against the vulva. In the out-patient service at the Boston Lying-in Hospital we use absorbent cotton soaked in corrosive sublimate 1–5000. The pads are so folded that the inner surface can be put at once on the patient without the ignorant attendants handling them. If the patient is torn badly there is no question but that a dry sterile pad is the most comfortable, and that we obtain the best results from them, rather than from a moist pad. If the pads are not covered with cheese cloth or gauze, a binder is necessary to hold them in place.

The use of post-partum douches is absolutely contra-indicated. It has been shown again and again that they are of no service and that infection has followed their use. Unquestionably there is a certain legitimate field for the use of vaginal douches (Case 73), but in routine cases the employment of a vaginal or intra-uterine douche is absolutely contra-indicated and a relic of past ages.

The care of the breasts is an important part of the puerperium. I have already spoken of the care of the breasts during pregnancy (page 88). When the patient has had her first rest after the delivery, the breasts should be washed off with soap and water and then a simple ointment put on the nipples on small sterile squares of soft linen. No attempt must be made if there is dry secretion on the nipples to take it off until it is softened by an ointment. I have used with satisfaction a 4% borated lanoline ointment for the nipples. How soon one determines to put the baby to the breast after the delivery depends much upon whether there is any milk

or not in the breasts. The tugging away at the nipple by the baby when there is no milk present is without doubt a potent cause for making the nipples sore. The baby gets nothing, bites the nipples and in a very short time cracks appear. If any secretion is present, there is no reason why the baby should not be put on eight or ten hours after it is born. There is no question, if it can be done, that it stimulates the breast tissue to secrete, but it is a doubtful procedure if there is no milk present. Before the milk comes in, while there is only colostrum in the breasts, once in four hours will be sufficient usually to satisfy the baby; as the engorgement increases the baby may be put to the breast every two hours and be allowed to nurse the breasts out well. There is no harm occasionally in letting the baby stay on so long that it may get too much and then regurgitate some of the milk. The relief that it gives the mother is usually worth the once or twice that the baby may regurgitate. If the breasts are full and pendulous there is no binder that is quite so satisfactory as what is known as the Boston Lying-in binder, sometimes called the Y binder. Two towels and safety pins are needed. The towels are folded lengthwise into strips about four inches wide, — the exact width is determined by the size of the breasts it is to be applied to. One arm of the Y goes above the nipples on the breast tissue and the other arm goes below. The binder is held in place by shoulder straps above and attached to the abdominal binder below. In order to have the binder smooth and give even support, absorbent cotton is placed where needed about the breasts. This binder should be put on for support and not for pressure. The relief that it gives the patient is astonishing and a physician himself should know how to put it on. Put on well, it is of great service, but put on badly it is worse than none at all.

Each time before the baby nurses the so-called breast tray should be brought to the side of the bed. The breast tray consists of the bottle of 4% boric acid solution, a bottle of 70% alcohol and a jar of 4% borated lanoline, sterile absorbent cotton and sterile linen squares. The patient is placed in the correct position for nursing and the

nurse's hands are washed. She then takes a little absorbent cotton, moistens it with boric acid and wipes off the lanoline which is already on the nipple. The baby is then put to the breast and after the nursing is over the nipple is again wiped off with the absorbent cotton wet with boric acid. If you believe in the use of alcohol the nipple is wiped off with the alcohol and after that the borated lanoline is put on the nipple. Usually these measures are very satisfactory and the nipples become hardened very quickly and cause no trouble. If the nipples become tender or painful to the nursing, the use of the nipple shield is at once indicated. With increasing tenderness, apply at once compound tincture of benzoin to the nipples. This is put on with a camel's hair brush in three layers, allowing each layer to dry before the succeeding layer is put on. In many cases this simple procedure will be all that is necessary to overcome the tenderness of the nipples. Occasionally the use of alcohol and compound tincture of benzoin hardens the nipple so much that the skin may crack more readily than if they were not used. If you use the nipple shield it must be boiled each time before it is used. A little boiled warm water is put in the shield and it is then put on the nipple. Care must be taken not to have the nipple shield and water so hot that the nipple will be burned. If this does not prove sufficient to heal the cracked nipple the baby must be taken off the breast for one or two nursings in order to rest that nipple.

The number of visits that you will find it necessary to make depends entirely upon how the patient progresses and upon the ability of the nurse that you have on the case. If there is no nurse, the patient must be seen within twelve hours after delivery. The following important facts must be noted: the temperature and the pulse, the size and consistency of the uterus, the amount of lochia and its character, whether the patient has voided or not, whether she has slept and if she has taken nourishment. The points to be noted in regard to the baby are taken up in the section on the baby. Never visit a patient unless you determine all the above points, they take but a few moments and if you do not know them at the beginning of the puerperium you

may become much troubled later. The patient should be seen again on the second and third days. If all is normal at these visits the fourth day may be skipped. Gradually the intervals are lengthened as the case progresses. Every case before it is discharged should have a pelvic examination. It is important for the patient's future health to know that the pelvic organs have returned to their normal condition. If the uterus is found to be large or retroverted, proper treatment at this time will usually speedily correct these conditions and insure health to the patient later, while if they are neglected, much discomfort may follow. The importance of this examination is seen by reference to Case 12.

In all cases the temperature and pulse must be recorded; do not rely upon your memory from day to day. A glance at the chart will show at once whether the patient is doing well or not. A chart only partially filled out is of more service than one's memory. The uterus should involute steadily; the individual rate, however, varies within very wide limits. It should not be tender to palpation unless for evident reasons, such as holding it after delivery for some hours and in such a case it should become less and less tender.

For the first few hours, six is a good routine, the patient must stay absolutely flat on her back, head low, and avoid all muscular exertion. She then may be rolled over on one side or the other. After the first twenty-four hours she may turn as she wishes in bed. The reason she is told to keep so quiet is the fear of an embolus. But when one realizes how quickly the women of the poor get up and about it makes one wonder how much exertion alone has to do with the causing of an embolus. My private patients are kept in bed fifteen to twenty-one days. The last week they sit up in bed for their meals and then lie down with one or two pillows as they elect. Whether the German idea of getting patients out of bed in three to five days will prove advantageous or not remains to be seen. I have never tried it but I doubt if our high-strung neurotic girl of to-day will stand such treatment. I now have a patient under my care who eighteen months ago was routed out of bed on the

third day after delivery in Germany. She has no desire to repeat the experiment within the next few weeks.

From the fifth to the tenth day of the puerperium, I have all my patients begin active leg exercises. First dorsal and plantar flexion, circumduction, of the foot, flexion of the knees. If there has been no laceration of the perineum I add the following exercise. The knees are flexed and then dropped outwards, the nurse then gives resistance to adduction by pressure on the knees. These exercises are at first done for five minutes once a day, then for five minutes twice a day and gradually increased to fifteen minutes twice a day. Rarely do these first simple exercises increase the lochia. If it does, and it becomes bright red, stop the exercises for forty-eight hours and then begin again. By the twelfth day raising first one leg and then the other to right angles with the body is begun. The next day the attempt is made to raise both together. If the patient cannot do this and at first it is quite common that she cannot, the nurse raises the legs slowly for her. The patient then lets the legs come down slowly to the bed. Slowness is essential for the best results in all of these exercises. There are few patients who do not feel the muscular exertion these entail. They must not be done to the point of fatigue. Gauge your patient and know what her muscular development is and tell her definitely how many times she may attempt to raise her legs. Such exercises as these will many times entirely do away with the prickling of the feet that is so annoying when the patients get up. Again and again have I had patients get out of bed on the fifteenth to eighteenth day after delivery and walk with a steady step. If the abdominal wall is much relaxed, after they are out of bed I advise them to keep up these last mentioned exercises and add the raising of the head and shoulders and body to right angles to the legs from a horizontal position on the floor.

If the patient conscientiously carries out these exercises she will recover her figure, which she so much desires, more quickly than in any other way. Usually a patient's one idea in getting up is to put on her corsets. If they are properly fitted ones, ones that do not press the abdominal contents

downwards, there is no reason why she should not wear them at once. Exercises will do more, however, for her figure than any corset. Corsets are an easy but vicious way of accomplishing what she desires. Patients must be warned if they are nursing not to wear high corsets that may impinge on the breast tissue for if they do, damage may be done.

Massage of the legs may be begun the first twenty-four hours and is most useful to keep the muscles in good condition. Gentle rubbing of the legs shortly after the delivery is many times most soothing to the patient and can cause no harm.

If the patient has been badly lacerated at the delivery or shows any sign of sepsis these exercises are contra-indicated because of the added danger of embolus. In a normal case, however, this added danger is not present and the exercises cannot be regarded as a possible cause of an embolus.

Such is the routine which has proved satisfactory in my hands. The fundamentals remain the same. Each case varies in its management and one is ever ready to change the routine to suit the individual conditions.

Reference to the cases shows that all of the normal cases but one were delivered with ether. The patients had no knowledge of when the baby was born. I recently found an old book on obstetrics, published in 1848 written by Hallich which contains the following passage:

"There are some persons, I know, who say that this suffering has been *ordained* for woman and that it *ought to be* endured. This notion, I think needs no refutation, it being just as unreasonable as to say that the sick should be allowed to suffer and die without assistance because *their* condition has been ordained. There are others, and men of science, too, who think that the pains of childbirth are necessary to its safe accomplishment, and that they are also valuable in a *moral* point of view."

There is no reason why ether should not be given in every normal labor. If you use it there are certain definite rules to follow. If the labor is slow and inefficient with irregular pains both in time and strength of contractions ether may stop all contractions and greatly delay the delivery. Before

ether is started the patient must be well along towards the end of the first stage. The pains must be coming regularly and of good strength. Ether must be given only with the contraction, as felt by the physician or nurse, not as asked for by the patient, and as soon as the contraction is felt to pass the ether is taken away. In this way the patient may be carried along some hours if necessary. At no time does she completely lose consciousness. In a few cases the patients become excited and lose control of themselves when ether is given, and in these patients one sometimes is disappointed in its action. Many patients will work much better when ether is given them. Gradually as the perineum becomes distended and the baby is about to be born the ether is forced and as the delivery is accomplished full surgical anesthesia for the moment is obtained. Ether then is taken away from the patient and she quickly becomes conscious. Carefully given it causes no complication. I prefer it to chloroform for it is much less dangerous.

In the past year and a half I have given nitrous oxide and oxygen anæsthesia a very thorough trying out and I am convinced that it is absolutely safe to both mother and child. A small dose of morphia or in some cases chloral hydrate in the early stage of a normal labor and the use of gas-oxygen later give a very satisfactory analgesic which in no way endangers either mother or child. The apparatus I have used is the Flagg. It is small, readily carried about and on the whole satisfactory though there are some slight drawbacks to its use. One objection to nitrous oxide-oxygen anæsthesia for the general physician is the cost of the apparatus and the cost, although not great, of the nitrous oxide and oxygen. Its use does need another physician to administer it.

The longest time I have given nitrous-oxide gas in an obstetric case is a little over six hours and there were absolutely no untoward symptoms. I now tell my patients that unless there is some good reason for not allowing them to have any anæsthetic, they can have nitrous oxide as soon as they think they want it. The secret of success in its use lies in the very prompt inhalation of the gas, the moment the pain

begins. The maximum effect is not obtained unless this is done. Properly given there should be no cyanosis; very rarely slight excitation is caused. Usually the patient after a few pains very quickly appreciates the relief it gives her and from then on breathes it in quickly and quietly. As the pains become harder, not infrequently gas alone is not sufficient for relief and then ether is given through the same apparatus. Some patients who have had obstetrical ether with their first baby and gas with their second say they prefer the ether, for they do not, with the latter, wake up so completely and therefore the length of the labor does not seem so great.

Again and again I have carried out normal deliveries and done low forceps under gas with but a very small amount of ether; the patients have all said that they did not consider the labor at all hard and that they never should dread a second.

In cases in which gas is not satisfactory, the cause I believe to be usually in the patients themselves, — they are apprehensive and will not do at once as they are told. In these cases encouragement and, if delivery is not imminent, the use of morphia will greatly help them to take the gas properly. When a patient realizes that her pains will be greatly relieved she faces her labor with much greater fortitude.

SECTION IV.

FORCEPS.

Case 15. LOW FORCEPS. OCCIPUT FULLY ROTATED. Patient is referred on May 17th to me for care during delivery. Up to the present time she has been in charge of her family physician. She is twenty-eight years old and has never had any serious illness. Her last menstruation began on August 31st making delivery due about the 10th of June. She has had a normal pregnancy. Palpation of the abdomen to-day shows an average-sized baby lying in a left position. Head is freely movable at the brim but by the fourth manœuvre it can be sunk into the pelvis. Fetal heart is 120 in the left lower quadrant. Measurements of the pelvis show crests 27.5 cm., spines 25 cm., external conjugate 21.5 cm. Blood pressure is 120. She apparently is in excellent condition.

May 31. Vaginal examination to-day shows the biparietal well through the brim. Cervix is soft and partially taken up and the os admits one finger. Promontory cannot be reached. Curve of the sacrum is apparently normal. The contour of the pelvis is normal. The closed fist can be readily pushed between the ischial tuberosities. Perineum is firm.

June 8. Telephone from the nurse at 3 A.M. saying labor had started at one o'clock and that the pains now were coming practically continuously though their strength was irregular. I reached the patient at four and found her having contractions every minute or minute and a half. Uterus was relaxing well between pains. It was not tender. Position made out to be O. L. A. By the fourth manœuvre the biparietal was found well through the brim. Fetal heart heard in the left lower quadrant, 120 to the minute. Patient's pulse is 70. There is no history of rupture of the membranes.

Vaginal examination at 4:30: There is no show. Perineum much less rigid than a week ago. Head is on the level

with spines of the ischia. Sagittal suture is in the antero-posterior diameter. Neither fontanelle felt. Posterior lip of the os can just be reached. Anterior is prominent and slightly edematous. No membranes are felt.

At the next pain I pressed upward trying to push back this edematous anterior lip and to a great extent was successful. At 4:45 she asked for and was given ether as the pains were coming very hard with intervals of only one minute and lasting a minute and a half. Her pulse was 80. Fetal heart 120. The uterus was soft between pains and not tender. At 5:30 she began to bear down with each pain and occasionally the slightest bulging was seen. Fetal heart the same, patient's pulse 86. No change in the type of pains. No tenderness of the uterus.

From now until 6:30 she worked hard but there was no apparent progress. The patient's pulse now was 100. I decided to deliver her because of the lack of progress and the rising pulse. Preparations were at once completed. An etherizer was sent for and as soon as he came the patient was etherized and carefully prepared. Leg holder was used to support the legs. I attempted to catheterize the patient but the head was so low that I could not obtain any urine. Perineum thoroughly stretched and vaginal examination showed that the posterior fontanelle was at the arch. Sagittal suture in the antero-posterior diameter. The ear I did not feel. The anterior lip of the cervix was not felt. The left blade was carefully applied hugging closely the side of the head. It was introduced opposite the left sacro-iliac joint and then swept up into position. The right blade was similarly applied but on the opposite side and brought into apposition with the first blade. Forceps readily locked and apparently an excellent application of the forceps was obtained. Fetal heart was heard beating regularly by the etherizer. With very slight traction downward the scalp came into view; the circulation was found to be excellent. A very slow delivery then done. With gradual extension the brow and face came over the perineum and the head was readily delivered. The baby cried at once before the shoulders were born. Slight traction on the neck brought

the anterior shoulder to the arch and then by lateral flexion upward the perineal arm was delivered and the anterior followed. The baby cried lustily. The cord when it stopped pulsating was tied and cut and the baby was put away. There was no tear of the perineum. Half an hour after the baby was born the placenta was delivered intact with all the membranes. The uterus acted well and no ergot was given. There was no bleeding and she was cleaned up and a sterile pad put in place. Put back to bed with a pulse of 72 and at eight o'clock was out of ether and in excellent condition. The baby weighed seven and a half pounds.

Evening visit: Patient has a temperature of 99.4°, pulse 80. Uterus well contracted, three finger breadths below the umbilicus. Lochia normal. Voided fifteen ounces of urine this afternoon. Milk is in the breasts and the baby is to be put to each breast for three minutes every four hours.

June 10. Milk came in very gradually and caused the mother little discomfort. Temperature normal. Pulse 72. Baby is nursing well on the breast for five minutes every two hours.

The convalescence was absolutely normal. Temperature never rose above 99°, pulse not over 80. Uterus involuted slowly and could be palpated from above until the tenth day. Lochia remained red until the sixteenth day. The foot exercises were begun on the tenth day and the leg exercises on the fourteenth. There was no apparent increase of the lochia from them.

Patient got out of bed on the twenty-first day and walked about her room. Vaginal examination in the fifth week: No discharge. No tear of the perineum. Slight bilateral tear of the cervix. Uterus normal in position and freely movable. No tenderness found in the pelvis. Baby is doing well, gaining steadily. Umbilicus is solid and no bulging. Movements are normal. Patient is discharged to her own doctor.

Case 16. LOW FORCEPS. IRREGULAR FETAL HEART. Patient is seen for the first time November 6. The last menstruation was April 21. During the first months of her pregnancy she had been under the care of no physician. She has had two miscarriages and was curetted after the last one. Except for these miscarriages the cause of which she does not know she has never been in bed sick. She was advised regarding the remainder of her pregnancy. Examination of the urine showed it to be normal. She is passing three pints of urine and her bowels are moving regularly without medicine.

January 18. Patient telephones that she is having severe pain in the right side of her back, low down, which is bothering her on walking and on sudden turning. Palpation over the right sacro-iliac joint showed definite tenderness. There was distinct limitation of motion on left lateral flexion and on bending forward. Flexion of the right hip with extension of the lower leg causes pain in the right sacro-iliac joint. Palpation of the abdomen shows a fair-sized baby. Fetal small parts on the left, and fetal heart best heard in the left lower quadrant. At that time it was noticed that the heart was irregular from the eighth to the tenth beat being dropped. Fetal heart not counting the dropped beats was 128. Pelvimetry gives the following results: crests 29 cm., spines 25 cm., external conjugate 22 cm. Diagnosis of the condition of the joint is undoubtedly a relaxed sacro-iliac joint due to the pregnancy.

I advised that her back be strapped with adhesive plaster or that she stay quietly at home for a few days and rest that joint. She had been going about a great deal and up and down stairs many times. If rest did not give her comfort I said she ought to be strapped at once. She chose to stay quietly at home.

January 21. She telephones that she had to walk a great deal yesterday and that the right side was again paining her. Pain was so severe that last night she did not sleep. She now consented to be strapped. As soon as she was strapped she obtained immediate relief.

January 26. Vaginal examination showed the head in

the pelvis. Cervix soft and not dilated or taken up. Ischial tuberosities are not close. Ischial spines are not palpated. Angle of the symphysis apparently normal. Fetal heart 130, left lower quadrant and absolutely regular.

February 10. The patient pulled off the strapping to-day as it was irritating her skin. She apparently is comfortable without it.

February 12. Patient started up in labor at half-past ten this morning with pains coming every fifteen minutes, very slight, although there are definite uterine contractions present. Fetal heart, the nurse telephoned, was regular at 130. At twelve o'clock fetal heart was listened to and it was found to drop every eighth to tenth beat, as it did three weeks before. Membranes were unruptured and the pains were now coming every six to eight minutes and lasting one minute. At 12:15 fetal heart was listened to and the beat was dropped only once in twenty beats. At one P.M. I examined her by vagina and the head was found to be on the perineum. Cervix was thick. Os was dilated two and a half inches. Membranes were unruptured. At 1:15 fetal heart listened to and it was found again to be slightly irregular. An assistant had been sent for. Preparations for delivery were completed. At 1:30 the fetal heart was found to be absolutely regular at 130. From then on until four o'clock there was absolutely no variation in the fetal heart. Membranes were still unruptured. At four o'clock I listened to the heart and found it to be 100 and a few moments later it rose to 144. I therefore decided to operate and deliver the patient at once. Probability is that the patient must be fully dilated by this time, as the pains had been coming every two minutes for the last two hours. I advised ether and delivery in the interests of the baby. Accepted by the husband. Patient prepared in the usual method, etherized, lithotomy position, catheterized. Perineum thoroughly and completely dilated. Os was fully dilated, only a small thin edge of the anterior lip could be felt. I ruptured the membranes and meconium stained liquor came away. The head was low and in making a definite diagnosis of the position, I found a loop of cord down beside the head. Cord

was found pulsating regularly when I first felt it but a moment afterwards it began to beat irregularly. The question now came up whether to push back the head and do a version or put forceps on to a low head with care so the cord would not be caught. I determined on the latter procedure. The head was fully rotated. The left blade of the forceps was put on hugging the head very closely, and the cord was felt pulsating outside the blade. Right blade was then put on without any difficulty. Blades locked well and as they were locked the etherizer listened to the fetal heart and found it beating very irregularly. The head was quickly brought into sight and by pressure on the scalp it was seen that the circulation was fair and therefore the head was brought slowly over the perineum. The head delivered, the face was blue and the remainder of the delivery was not hurried. The baby showed slight asphyxia but did not cry well for some minutes. The liquor which came away after the birth of the baby was meconium-stained and in the vagina was a large mass of meconium.

Examination of the perineum showed a slight internal tear in the median line which was at once repaired with two chromic catgut sutures. There was no external tear. The placenta was delivered thirty minutes after the birth of the child intact with all the membranes. The uterus did not act well but constantly relaxed, contracting, slowly and inefficiently. Ergot was given subcutaneously and ice was put to the fundus. The patient's pulse now was 120, but of good volume and tension. She was cleaned up, sterile pad put over the vulva and put back to bed.

The uterus was constantly held and gradually began to act better. There was much more than a normal amount of bleeding, but not enough to call a hemorrhage. A half hour after the first dose of ergot was given a second was injected. The pulse steadily dropped in rate and one hour after the delivery was 76 but the uterus was acting only fairly well. Careful watch was kept on the uterus and it was not allowed to fill up. Two hours after the delivery it began to stay well contracted and there was from now on only the normal amount of flowing. She made an uninterruptedly good convalescence and nursed her baby well.

Case 17. OCCIPUT RIGHT POSTERIOR. LOW FORCEPS. RIGID COCCYX. Patient is seen for the first time May 9th. This is her first pregnancy. She is thirty years of age, has always lived an out-of-door life and has ridden horseback a great deal. She has never been sick. Her last menstruation began on September 2nd. The August period was perfectly normal and there was no October period. She has had a normal pregnancy in all respects. Her confinement is due between the sixth and twelfth of June. She is living out of town and plans to come in town to a hospital for delivery.

Palpation shows a fair-sized baby lying in a right position. Fetal heart is 120 in the right lower quadrant. Measurements are normal.

VAGINAL EXAMINATION: — Head is well down in the brim. Promontory cannot be reached. Contour of the pelvis normal. Coccyx is noticeably forward and rigid. Outlet is normal.

June 9. Came to the hospital six days ago. There is no sign of labor. She is perfectly comfortable. Palpation shows the head firmly fixed in the brim. A large baby, weight estimated at eight pounds and a half. She is worrying because she does not feel the baby kick. Fetal heart listened to and found but could not be counted because of the loud placental bruit.

June 19. There is still no sign of labor and she wants to go home and be confined there. To-day she asked me, if in case I knew there had been no possibility of pregnancy beginning right after the September period, would it make any difference in calculating the date of confinement? I told her that it would. She then said that she and her husband were on a horseback trip in the mountains of Mexico and they especially avoided any intercourse until they had finished this trip. I then counted up two hundred and eighty days from the earliest possible time pregnancy could have begun and the date was June 23rd. As she had to look forward to another week at the hospital she decided to take her nurse home with her and be confined there. Vaginal examination to-day showed the biparietal to be well through the brim. Cervix is soft and nearly flush with the vagina.

As I saw no reason to expect a difficult delivery, the only questionable obstacle at all being the rigid coccyx, I agreed to her going home.

June 25. Patient at 8 P.M. started in labor. Pains began every fifteen minutes and lasted thirty seconds. At nine o'clock pains began to come every five minutes lasting one minute and occasionally one and a half to two minutes. At ten the pains were coming every three minutes, lasting two minutes. The uterus was soft between pains. Fetal heart 126, best heard just below the umbilicus. The patient thinks some waters came away when she was at dinner but she is is not sure. The nurse says that her underclothes were very slightly wet. Probability is that the membranes ruptured at the onset of labor. The patient's pulse is 80.

Palpation: — The fetal small parts are distinctly felt on the patient's left and the fetal back is on the right making the position a probable O. D. P.

Vaginal Examination at 10 P.M: — Os uteri, edge thin and dilatable, and dilated to two-thirds. The head is well in the pelvis. There is slight pitting of the scalp when the examining fingers pressed in on it. Pains continued coming every three minutes, lasting one to one and a half minutes. Fetal heart was listened to every half hour and there was no variation. At half-past eleven she began of her own accord to bear down, but the perineum did not show the slightest sign of bulging and there was no show. She kept this up for one hour and there was no material progress made. Fetal heart now listened to every fifteen minutes and remained good, 126 to the minute. Examination at quarter of one showed a large mass that readily pitted when the examining finger was pressed into it and beyond this mass was felt the fetal head which had not come down any since the first examination. Sutures in the head could not be felt. The os was fully dilated. In nearly three hours the patient had not gained anything in the descent of the head and a large caput succedaneum had formed. Mother's pulse was 98. I decided then to deliver the patient for the following reasons: For three hours there had been no appreciable descent of the head in spite of excellent labor, a large caput succedaneum was forming

and the maternal pulse was rising. The patient was etherized, placed in moderate lithotomy position and carefully scrubbed up. Catheterized. Perineum thoroughly dilated. Examination then showed the head to be pushed down firmly against the coccyx, the sagittal suture is in the transverse diameter and the occiput is on the right showing that the position had been an O. D. P. and that now it is partially rotated. The posterior lip of the os was not felt. The anterior could be felt but was thin and soft. A large caput was present. The head was then pushed upwards slightly. The right blade was passed along the hollow of the sacrum until it was in place over the baby's right ear. The left blade was then passed along the left side of the pelvis over the face, swung upwards and over the brow until it was opposite the first blade. The forceps were then readily locked. The tips of the forceps were pointing to the occiput, the transverse diameter of the forceps was at right angles to the transverse diameter of the pelvis.

The fetal heart now listened to by the etherizer and found to be regular. The first traction brought the head down again on the coccyx. With hard traction and rotation forward the head gradually descended. As soon as I was able to sink the occiput low enough under the arch, overcoming gradually the resistance of the coccyx, the remainder of the delivery was very simple. Pressure on the scalp showed excellent circulation and the delivery of the brow over the perineum was accomplished very slowly. There was no difficulty with the shoulders or body. The baby cried at once, and as soon as the cord stopped pulsating it was clamped and cut. There was no external tear of the perineum. There was a slight tear on the patient's left and another on the right perineum. Each was sewed up at once with three chromic catgut sutures. The placenta came away intact with all its membranes twenty minutes after the birth of the child. There was no bleeding. The patient was in excellent condition, pulse 110. The baby weighed eight pounds.

July 20. The patient got up on the twentieth day and walked about the twenty-first. Marked "pins and needles" in her feet when she first walked although she did her exer-

cises faithfully. Abdominal wall is very flabby and the exercises for strengthening these muscles are to be continued night and morning. The baby is nursing and doing splendidly.

August 20. Patient has done uniformly well and now is in excellent condition. Vaginal examination: — No discharge present. Body of the perineum is excellent. The tear on the left is evident and did not heal well. Tear on the right well healed. Slight stellate tear of the cervix. Uterus normal in size and position. No tenderness anywhere in the pelvis and palpation of the coccyx does not cause her any pain. Baby is gaining and in excellent condition. Patients discharged to the family physician.

Case 18. PARTIAL MANUAL DILATATION OF THE OS UTERI. LOW FORCEPS. July 23. Patient is a primigravida, 23 years of age. She has been under the care of her physician in another city up to the present time and has only recently moved here. She is seen to-day for the first time. She says that she has been perfectly well during her pregnancy and that all urinary examinations have been normal. The beginning of her last menstruation was October 17th making delivery due about July 27th. She has always been well with never any serious illness. She was at once examined because of the nearness of her approaching labor. Palpation shows a good-sized baby. The back is on the left. Small parts definitely made out on the right. Head is engaging at the brim but the biparietal is not yet through. Fetal heart is in the left lower quadrant, 130 to the minute. Crests 27 cm., spines 24 cm., external conjugate 20 cm. Vaginal examination: Introitus tight. Perineum rigid. Cervix soft and partially taken up. No dilatation of the os. The head from below can be readily pushed up. Promontory cannot be reached. Contour of the pelvis is normal. Ischial spines are prominent. Arch of the symphysis is normal. The closed fist can be placed between the ischial tuberosities. Specimen of urine obtained and examination of it was normal.

August 7. Telephone from the patient at 7:30 P.M. that she was having pains every four minutes and that they were lasting nearly a minute. She went at once to a private hospital. I saw her at 9 P.M. and she says that she has been uncomfortable the greater part of the afternoon but definite pains did not begin until about 6:30. Palpation shows position the same as before but now the head is well down in the pelvis. Fetal heart is 120, maternal pulse is 80. Patient was having very hard pains every two minutes lasting one and a half minutes. She cried out with the beginning of each one and then would bear down. Vaginal examination at 9:30 showed that the cervix is taken up but there is no dilatation of the os. The lower anterior uterine segment is very thin. A finger tip can be passed through the os and no forewaters can be made out. The biparietal diameter is

through the brim and the head is firmly wedged down into the pelvis. She was at once given primary ether and the os dilated up manually to two inches. Dilatation was very readily accomplished by gently separating the fingers of the examining hand. She came out of ether very quickly but there were no pains for half an hour. The uterus was soft. Fetal heart 130. Much show of bright blood. Pulse 90. At 10:30 the pains were coming every five minutes lasting one minute. She acted badly throwing herself about and crying out loudly. Probably because of the ether she had lost control of herself and she made no effort to regain her control. The fetal heart remained 130 and regular. The uterus was not tender and was relaxing well. At eleven thirty she began again to bear down with each pain. Her pulse 80, the fetal heart the same and the uterus was acting well. At twelve o'clock very light obstetrical ether was given her. At 1:30 A.M. the pains began coming at two-minute intervals and lasted a minute and a half to two minutes before the uterus became fully relaxed. The fetal heart now found to be 148 and the patient's pulse had risen to 96. She now had a constant desire to bear down and the uterus was relaxing very slowly and the lower uterine segment was distinctly tender. I decided to deliver her at once because of the action of the uterus, its beginning tenderness, the rise in the fetal heart and the slight rise of her own pulse.

Preparations had been begun for operative interference and were quickly completed. She was etherized and carefully scrubbed up after she was in a moderate lithotomy position. The legs were held by two nurses. The vagina was wiped out carefully with 70% alcohol and then an examination made. The os was now three inches dilated, thin and dilatable. A large caput was present. Head was on the perineum. She was then catheterized and a small amount of urine obtained. The perineum was slowly and thoroughly dilated; gradually the whole hand was worked into the vagina. The head was pushed up a little way and the cervix dilated as much as possible without displacing completely the head. The position O. L. A. was confirmed.

The right hand in the vagina the left blade was passed

along the gloved hand, the fingers touching the cervix and the blade placed inside the cervix on the side of the child's head. The right hand removed and the fingers of the left hand inserted into the vagina. The cervix was felt and the blade passed close to the head and placed opposite to the left blade. The forceps locked at once. Slight traction downwards and the head descended putting the cervix on the stretch. The anterior and then the posterior lip was pushed back against the oncoming head. It was evident there was no bony resistance to the delivery. With considerable amount of traction the posterior and then the anterior lip of the cervix slipped back. Head then began to bulge the perineum and a slow extraction was done. The occiput was sunk well down under the symphysis and no attempt at extension was made. The pressure on the baby's scalp showed that the circulation was good and the delivery was not hurried. Extension gradually took place and the line of traction was slowly changed. Forceps were kept on until the delivery of the head was completed and then taken off. The occiput restituted to the left. The cord was felt for and was not about the neck. With slight traction on the head the anterior shoulder came to the arch and was delivered and the perineal arm followed readily. The body was born by lateral flexion. The baby cried at once. Cord was not pulsating and was clamped and cut and the baby put aside. The caput was large. The uterus acted well and there was no bleeding. Perineum shows an internal tear on the patient's left and also a median external tear. They were repaired at once by three chromic catgut and two silkworm-gut sutures. Placenta was delivered in twenty minutes intact with all the membranes and no bleeding. Mother was in good condition with pulse of 110. Uterus acted well. Baby weighed 8 lbs. and examination of it showed it to be normal.

August 9. Evening visit. Temperature found to be 102° and pulse 120. Examination of the heart and lungs negative. Abdomen not distended. Uterus well contracted, three finger breadths above the symphysis and not tender. Lochia normal in amount, red in color and normal odor. She looks bright. Does not act sick. Secretion present in

the breasts. Baby was put to the breast twice to-day and took hold well. I can find nothing to account for the rise in temperature. She is not, in my opinion, septic. I decided to let her alone and await developments. On making inquiries of the nurse for any possible cause for temperature I found that four members of her family had come to the hospital to see her and had insisted upon going by the nurse and seeing the patient and the baby.

August 10. Temperature this morning 100.8°. Pulse has dropped to 90. Examination showed her to be in absolutely normal condition. Temperature to-night 98.6° and pulse 84°.

Thereafter she made a perfectly normal convalescence with her pulse gradually dropping to 70. Temperature remained absolutely normal. The milk came in slowly on the third day and the baby has been nursing regularly ever since. Stitches were taken out on the tenth day and apparently a good result. The baby has done consistently well. The umbilicus presents a large, thick stump, and is moist. It was touched on the tenth day with the silver nitrate stick, wiped off with alcohol and powdered with subgallate of bismuth.

August 20. Umbilicus looks very much better. Now only a small granulation area.

The patient got out of bed on the twenty-first day and went to her summer home ten days later. Vaginal examination the day before discharge shows excellent result on the perineum. No bulging on bearing down. Tear on the right has healed. On the right side at the vault is a distinct band running from the cervix to the vagina showing that she had a severe tear of the cervix. Uterus is normal in position and well involuted. No tenderness present in the pelvis. No vaginal discharge. The baby's umbilicus is healed.

NOTE: — The temperature on the night of the ninth I considered first due to sepsis but I could find no other signs of infection. It is probable that this temperature was due to absorption at the cervical tears together with the excitement of seeing her family. There is no question but that excitement may give a fleeting temperature. The diagnosis first, however, is sepsis. I chose a waiting policy and had no cause to regret it.

Case 19. OCCIPUT LEFT POSTERIOR. HIGH FORCEPS. DOUBLE APPLICATION. Patient is seen for the first time July 20. Her last period was April 22. She will be due for delivery the last week of January. Except for slight amount of acid eructation she is in excellent condition. Milk of magnesia which had been given her gives her no relief. She was given the regular advice about pregnancy. For the acidity she was given the sodium bicarbonate, bismuth subnitrate and beta napthol mixture. She went through her pregnancy absolutely normally with no discomfort until December 13th when she telephoned that she was having much pain in the lower abdomen especially on walking, on sudden movements and on going downstairs. Examination showed that pressure over the symphysis caused her distinct pain and that with pressure over the iliac crests the same pain could be elicited that she complained of on walking about. There was no tenderness over either sacro-iliac joint.

Diagnosis: Relaxation of the symphysis pubis.

Treatment advised was broad adhesive strapping about the iliac crests and above the trochanters to hold the symphysis tight. This was at once put on and as soon as she was about, she found she obtained perfect relief.

January 4. Palpation shows a large abdomen. Much fat and apparently considerable amount of liquor present. Position is O. L. A. Head freely movable at the brim. Fetal heart 130 in the left lower quadrant. The baby will weigh about 7½ pounds. Intercristal diameter 30 cm., interspinous 26 cm., external conjugate 21 cm. Vaginal examination, introitus large. Promontory cannot be reached. Pelvis is ample. Pubic arch is normal and the closed fist can readily be pushed between the tuberosities of the ischia.

January 10. The strapping to-day was removed. It has caused marked irritation on both hips.

January 11. Has but very little discomfort at the symphysis. Only present on going up and downstairs.

January 13. Patient was awakened this morning at 1:30 by being flooded with water. She was very much alarmed by it and I saw her at once. Fetal heart listened to and found to be perfectly regular in left lower quadrant. Head

was not engaged. No pains. As the head was not engaged and as the gush of liquor apparently had been great I examined her at once and found the os not dilated. Cervix about half taken up. Head high and not engaged. No cord could be felt. Her nurse was sent for and she was kept in bed as there was constant oozing of liquor. She slept the rest of that night and had no pains.

January 14. At 3:30 this morning she began having very slight contractions about once in twenty minutes, just enough to wake her up and prevent her from sleeping. She was given fifteen grains of chloral by rectum and this was repeated in one hour. She slept from then until seven o'clock when she was awakened by the contractions which came every twenty minutes, lasting thirty seconds. She dozed between the pains. From ten in the morning until noontime she had pains every seven minutes lasting one-half to three-quarters of a minute. Fetal heart remained regular at 128. Examination at twelve showed that she was then dilated the size of a silver dollar; biparietal was nearly through the brim. At 2 o'clock she began to act badly and to throw herself about the bed and beg for ether. The pains began to come distinctly harder and at three minute intervals, lasting one-half a minute. At no time did they last more than forty seconds. Examination at four showed that the head was no lower. She now was dilated three inches.

Pains from now on became very much more severe and the uterus showed slight tendency to stay tonically contracted. When palpated at 4:30 the whole uterus was very slightly tender but was relaxing well. Obstetrical ether was now started. She was standing labor poorly and her pulse had risen to 110. Fetal heart remained at 130. The pains for the last hour came at seven minute intervals and lasted but thirty seconds. Fetal heart remained the same. The uterus did not relax fully but the tenderness did not increase. The head from palpation seemed a little lower. Her pulse was 120.

I decided now (6 P.M.) to deliver her because of her rising pulse; the tendency of the uterus not to relax fully; the

slight tenderness of the uterus and because of the poor type of labor she was in.

Operation. Etherized. Lithotomy position. Prepared. Perineum carefully dilated. Os found to be fully dilatable and thin. Position by the contour of the occiput and the ear was found to be O. L. P. Well flexed. In determining the position the head went up above the brim. Some three inches within the os was found a definite thickening of the uterus which extended completely about it. It dilated very readily. That it was a beginning contraction ring there could be no doubt.

My right hand grasped the occiput and turned it from left to right making it an O. L. A. With pressure by the etherizer from above on the head I applied the left blade to the left side of the fetal head. The hand was then removed and the right blade passed in along the left hand; in attempting to place this blade the head slipped back to a posterior position. I then took off the forceps and applied the left blade again to the fetal head in the posterior position. The right was then readily placed. The forceps locked well. Fetal heart listened to by the etherizer and found to be regular.

Tentative traction applied and the head readily came down. Several more tractions without much force brought the head to the perineum and it started to rotate. The sagittal suture was found to be just anterior to the transverse diameter. Forceps were now removed with the intention of reapplying them with the tips towards the occiput. Examination now showed the sagittal suture in the left oblique diameter. The head had slipped back into a posterior position. I reapplied the forceps without attempting to rotate anteriorly the head. Traction downward combined with rotation forward brought the occiput to the arch and the forceps were completely reversed. They were now taken off and quickly reapplied to a fully rotated head. With very slight traction the head was then delivered. There was no trouble with the shoulders or the body. The baby cried at once and was in excellent condition. In a few moments the cord stopped pulsating and it was then clamped and cut. There was no bleeding to note. Patient's pulse was 120, of

good volume. Examination of the perineum showed no external tear. There was a small but deep internal tear in the median line; no other tears found. This tear was at once repaired with chromic catgut No. 2 sutures passed from the vaginal mucous membrane on one side to the base of the tear and out on the opposite side. Three such sutures were passed and brought the perineum into excellent approximation. These sutures were not tied until after the placenta was delivered. Thirty minutes after delivery of the baby the placenta came away intact with all the membranes. The uterus acted well and there was the normal amount of bleeding. Patient's pulse when she was put back to bed was 120. She made a good recovery from ether and there was no vomiting.

January 15. Temperature this morning 99.4°. Pulse 100. In excellent condition. Temperature to-night 98.6°, pulse 88. Has voided without difficulty. The baby weighed eight pounds.

January 17. Bowels moved to-day by castor oil half an ounce followed in four hours by a suds enema. There is no milk in the breasts and the baby is put on a modified milk.

January 30. Has made an excellent convalescence. Temperature at no time has been over 99.4° and the pulse not over 94. To-day the evening temperature is 98.6° and pulse 78. She complains of inability to hold gas by rectum. Her control of feces is perfectly good.

February 13. Menstruation began to-day. Continued for five days and was of the same character as before her pregnancy.

March 9. The patient refuses to be examined vaginally. She says she feels perfectly well and that there is no vaginal discharge. She is nursing her baby and is going about apparently in better condition than ever before her pregnancy. She says that if she feels wrong in any particular she will be examined. She now has complete control of the sphincter in respect to gas. Her early lack of control was probably due to the stretching of the sphincter at delivery.

Case 20. OCCIPUT LEFT ANTERIOR. EDEMATOUS ANTERIOR LIP OF THE CERVIX. HIGH FORCEPS. Telephone from the attending physician at 12:30 A.M., September 20, saying that he had a patient, a primapara, who had been in labor some thirty-six hours; membranes had ruptured two hours before the onset of labor, that the head is high, that she is now dilated two and a half inches and that he can feel a low attached placenta anteriorly and that when examined she bleeds more freely than he likes.

I went as soon as possible to the patient. She is a large woman and is having pains every six minutes, lasting but twenty to thirty seconds. Her pulse is 110 and of good volume. Palpation of the abdomen shows a large baby. The uterus is firmly contracted on the baby, relaxes between pains very poorly and is tender on palpation. The position is not determined, but the physician says that definite fetal motions have been seen and felt on her right. Fetal heart is best heard in the lower left quadrant, 160 to the minute, a rise from 120 in the last three-quarters of an hour.

VAGINAL EXAMINATION: — Large introitus. Anterior vaginal wall is edematous and the anterior lip of the cervix is felt low down in the vagina and is very edematous. The os is dilated two inches. The promontory is not reached. The head is firmly wedged at the inlet, but the biparietal diameter of the head is not through the brim. The examining finger inside the cervix could feel no placenta. The anterior lip bled when touched. The probability is that it is this edematous anterior lip that the physician took to be the placenta.

I advised that she be delivered at once because of the length of labor, because the uterus was becoming tonic, because it had already become tender, because of this edematous condition of the cervix, and because the fetal heart was going up. A guarded prognosis was given for the baby.

The advice was accepted by the husband and the wife and preparations for delivery were completed at once.

She was etherized, placed in lithotomy position and her legs supported by the Robb leg holder. She was scrubbed up after she was under ether. Catheterized, but no urine

obtained. Perineum thoroughly and completely dilated manually. The anterior lip of the cervix was then seen low in the vagina, thick, edematous, bluish in color and it bled when touched. The dilatation of the cervix was slowly and carefully done. It readily stretched but it was felt to tear on each side. The closed fist was finally brought through the os uteri three times, and it offered no resistance.

The position was found to be an O. L. A. not rotated. In determining the position I felt the cord pulsating beside the head, regularly, though very rapidly.

With my right hand in the vagina and my fingers reaching the cord I passed the left blade of the forceps into the vagina through the cervix, hugging the head closely. Thus placed, I removed my right hand and then with my left hand in the vagina I guided the right blade into position; the forceps locked with difficulty; the ends of the handles did not come well together. I examined again and found the cord was outside the forceps pulsating slightly irregularly. On the first traction the head came down slightly and it was at once seen that the thick edematous anterior lip was the obstacle to delivery. Traction downwards with the forceps and with pressure upwards on the cervix advance was gradually made. Slowly the anterior lip was pushed back behind the on-coming head. The posterior lip gave no trouble, and as soon as the cervix retracted, the head quickly came to the perineum. As soon as the scalp was in view pressure on it showed the circulation to be present and good. Extraction then was slowly finished, the circulation remaining good. There was no delay, however, in getting the head delivered. The cord was not about the neck. Traction at once on the neck brought the anterior arm down under the arch, and the shoulders were then delivered with but little trouble and the body followed. The baby gasped in a few moments, but it was some minutes before it cried, though the color was good, and the cord pulsated feebly. The cord was clamped and cut. Gradually the baby breathed better. Ether was very readily noticed on its breath when it breathed.

The uterus contracted well and there was no excessive bleeding. Examination of the perineum showed a deep sec-

ond degree median tear. The patient's pulse was now 120 and only of fair character. One buried No. 2 chromic catgut suture was quickly placed including the deepest part of the tear, and then three silkworm-gut sutures rapidly placed and left untied until the placenta was delivered ten minutes later, intact with all the membranes. There was no bleeding and the cervix was not examined. The perineal sutures were now tied, the patient cleaned up, and a sterile vulva pad put in place and patient at once put back to bed. She was in fair condition, although she looked badly. Pulse remained for two hours 120, but improved in quality. The uterus remained hard and there was no bleeding. She came out of ether quickly. The baby weighed nine pounds and four ounces, and shortly after the delivery was in good condition.

Telephone message from the physician in charge two weeks later states that the patient had made a good convalescence and that the baby had done well.

Case 21. OCCIPUT RIGHT POSTERIOR. MANUAL DILATATION. HIGH FORCEPS. Patient is seen for the first time June first. This is her first pregnancy. Her last period was October 26th. Normal in all its characteristics. She would, therefore, be due for delivery from the third to the ninth of August. She has had a perfectly normal pregnancy.

July 1. Palpation shows the baby to be of fair size, floating head in the right posterior position. Examination of the pelvis shows intercristal 28 cm., interspinous 25 cm., external conjugate 20 cm. Fetal heart 120, in the right lower quadrant. Urine at all times has been normal.

August 1. Vaginal examination:—The perineum is soft. Cervix is partially taken up but no dilatation is present. The presenting part is readily reached but can be pushed out of the brim. Promontory cannot be reached. Ischial spines are not prominent. Contour of the pelvis is normal. Pubic arch is normal. Closed fist can be pushed between the tuberosities. Inclination of the pelvis is normal.

August 6. Telephone from the nurse at 7 A.M. saying that the patient has been having pains since two, lasting only about ten seconds and coming every twenty or thirty minutes. I saw the patient at ten o'clock. She then was having a few contractions once in twenty minutes and lasting one-half a minute. The pain was very slight. At eleven they stopped entirely and she had a nap between two and four. At six o'clock pains started up again slowly every twenty minutes lasting one-half to three-quarters of a minute. At 10 P.M. they began coming regularly every ten minutes, lasting three-quarters of a minute. Palpation showed the biparietal was not through the brim but the head is firmly set in the brim. Uterus is relaxing well between pains. Fetal heart is 130 and regular. Membranes are unruptured.

August 7. She has had pains once every ten minutes lasting one-half to one minute during the night. Had practically no sleep last night. At 7 A.M. she was examined and it was found that the os was one inch dilated, thin and rigid and cervix entirely taken up. Head lightly engaged but was distinctly lower than at the examination a week ago. Anterior lower uterine segment was thin. Uterus was relaxing well

between pains and was not tender. Pulse 110. Fetal heart 130. I gave her 20 gr. of chloral by rectum and she obtained two hours sleep. From nine-thirty to eleven-thirty she had hard pains every three minutes lasting one minute to a minute and a half. Vaginal examination now showed that there had been no change except the fact that the lower anterior uterine segment was more markedly thinned. Palpation of the abdomen showed that the lower uterine segment was distinctly tender although the uterus relaxed well between pains. Pulse 120. I then decided to deliver her because of the lack of progress in the dilatation, the rising pulse and the increasing tenderness of the uterus and the thinning of the lower uterine segment.

The patient was etherized and placed in moderate lithotomy position. Scrubbed up with soap and water. Washed off with corrosive solution and then 70% alcohol. The perineum carefully and slowly dilated as much as possible with the hand. The os was found to admit two fingers. It was gradually dilated until the middle finger could be pushed by the os. Gradually the dilatation was increased so that the other fingers entered. Then with the fingers in the shape of a cone the whole hand was gradually passed by the os. The fist was now brought slowly down through the os and out of the vagina. There was then considerable bleeding. Pulse remained at 120 and of good volume. The hand was then passed into the vagina and through the os and the closed fist brought down slowly through the os three times. The last time the os grasped the fist very slightly. All through these manipulations the membranes did not rupture. They were now ruptured with the hand in utero and the position was found to be a right posterior. The left hand grasped the vertex about the occiput and very readily rotated it to an anterior position. The etherizer then pushed down on the head from above holding it at the brim. The right blade was now applied first without difficulty to the right side of the fetal head. The left hand now was taken out of the vagina. Pressure above by the etherizer kept up and the left blade was applied opposite to the right. This method of applying the forceps necessitated rotating the

handle of the right blade about the handle of the left in order to lock the forceps. This was readily done and the forceps locked well. By the first tentative traction it was seen that the head descended a little. Fetal heart was listened to by the etherizer and found to be present and regular. Traction now by means of traction-rods brought the head readily to the pelvic floor. Much traction was necessary to sink the occiput below the arch. Care was taken to have the traction intermittent and the handles also after each traction were unlocked. At each traction progress was made and as soon as the occiput was sunk well under the arch the remainder of the delivery was easy.

Circulation of the scalp was seen to be excellent and the head was slowly delivered. The baby cried at once. There was no bleeding. The mother's pulse was 140 and she looked badly. The cord was clamped and cut and the baby put aside.

The uterus acted well and twenty minutes later the placenta came away intact with all the membranes. There was a tear on the left pelvic wall and in the left perineum. No external tear. Three chromic catgut sutures No. 2 were placed and tied at once in the pelvic wall. The stitches were placed in the perineum but were not tied until the placenta was delivered intact with all the membranes forty minutes later. Patient's pulse continued to be 140. She was put quickly back to bed. She had marked shock and looked badly. She was pale. Her respirations were good. There was no bleeding. The uterus was hard. She soon began to come out of ether and to become restless, and was given at once morphia gr. $\frac{1}{6}$ subcutaneously. Half hour after delivery the pulse became of poor volume and she was given subcutaneously strychnia gr. 1/20. Pulse at once improved and the improvement was held. She gradually picked up and two hours later she was in very fair condition with pulse of 110 and no bleeding. Baby was in excellent condition.

The morning of the first day temperature was normal and pulse 100. Baby is crying and acts hungry and is put on a modified milk which satisfied her. Early the morning of the third day the mother was given half an ounce of castor oil

and two hours later had a very constipated movement which caused her much pain. She at once was given by rectum four ounces of oil and three hours later a suds enema. An excellent result without pain was obtained. Milk came in on the fourth day and she nursed her baby satisfactorily. Her convalescence was uneventful. Examination at the end of the fifth week showed an excellent result on the perineum. Stellate tear of the cervix. Uterus normal in size and position. No tenderness anywhere in the pelvis. Is up and about the house. Is nursing her baby regularly and is gradually getting back to her routine.

Since this pregnancy I have looked after her on two other occasions and each time she has had a normal delivery.

Case 22. OCCIPUT LEFT ANTERIOR. CONTRACTION RING. HIGH FORCEPS. FLAT PELVIS. Patient is seen for the first time on Sunday, January 3rd, in the Out-Patient Department. She came in labor January 2nd about noontime, but did not send for the externe until January 3rd at 3 A.M. She was seen by the house officer at 9 A.M. and he then reported the condition to me as follows: — that he had just seen a colored girl who had been in labor twenty hours, in her first labor. Membranes were ruptured and the head high. Fetal heart 120. Measurements, crests, 24 cm., spines 22 cm., external conjugate 17 cm. That the externe says the patient has made no progress in the last two hours. I saw her at once at her home, and it was in such a poor part of the city and the conditions for operative delivery were such that I felt it too great a risk to operate there and I therefore sent her at once into the hospital. She entered the hospital at 10:15 A.M. Vaginal examination then showed high presenting part, probably occiput left anterior with a large caput. The promontory is readily reached and very prominent. The os is two-thirds dilated and is thin and dilatable. Palpation of the abdomen showed it to be rigid and the lower uterine segment is distinctly tender. It is a small baby under seven pounds in weight. Fetal heart is 140 in the left lower quadrant and slightly irregular. She had been in this condition now for some hours and I therefore advised immediate delivery. The patient absolutely refuses to allow any "cutting" operation.

She was immediately prepared and when the preparation was completed she was etherized and placed in lithotomy position. Perineum thoroughly stretched and then the pelvis more thoroughly examined. It is seen that the outlet of the pelvis is sufficiently large. The promontory is readily reached. The closed fist can only with difficulty be pushed between the promontory and the symphysis. After the cervix was thoroughly and completely dilated the hand was inserted into the uterus beyond the head and a tight contraction ring was felt at the neck, and the uterus beyond was firmly contracted on the baby. I decided to do a forceps delivery if possible, reserving craniotomy if necessary on a living child

as an operation of necessity. The position was O. L. A. The left blade was carried carefully in and placed on the left ear as nearly as was possible. The assistant held firmly the head down on the inlet and the right hand was withdrawn from the vagina and the left hand inserted and the right blade applied along the right sacro-iliac synchondrosis and swept up into apposition to the first blade. The forceps locked readily and apparently it was a fair application. Tentative traction showed that the forceps did not slip and on the second traction it was seen that the head came down and entered slightly into the brim. The anterior lip of the cervix came down in front of the head and with much pressure my assistant pushed it backwards. Walcher's position was then used and seemingly the head advanced more with this position. After the fourth traction the head gave a sudden jump as if it had gone by some obstruction. My explanation of it was that the head had gone by the promontory. Examination showed this to be true. The head was now well within the pelvis. From now on the head readily came down and there was no trouble with the remainder of the delivery. As the head was delivered the eyes were wiped out. The cord was felt for but not found. Traction downwards on the head and the anterior arm came under the symphysis and the body of the baby was then delivered. Cord was found pulsating slowly and the baby was in pallid asphyxia. Cord was clamped at once and the baby given to an assistant to resuscitate. There was a slight perineal tear with a slight bilateral tear of the cervix which was not repaired. Perineal tear repaired at once with two silk worm gut sutures. Placenta was delivered twenty minutes later intact with all the membranes. She stood the operative delivery well and went off the table with a pulse of 120. There was no bleeding and the uterus remained well contracted. Examination of the baby shows a linear bruise with marked depression over the left eye. Forceps mark is readily made out over the left ear and the right frontal prominence showing that the right blade was swung up too far. The damage to the left eye could in no way have been done by the forceps blade and was undoubtedly

caused when the head came by the promontory. The baby soon cried well and breathed satisfactorily.

January 4. Mother in excellent condition. Temperature 99°. Pulse 100. The baby is crying poorly. The left eye is markedly edematous and the upper lid is slightly everted. The linear depression running from the left eyebrow to the frontal suture is marked. The baby is in very poor condition but there are no definite symptoms of cerebral hemorrhage present.

January 5. Baby became distinctly worse during the night. Holds his head with marked retraction and the body arched. Anterior fontanelle is tense and level with the parietal bones. Posterior fontanelle also tense. Left eye is protruding and conjunctival hemorrhage evident. Tension of the left eye markedly increased. Right side of the face apparently normal. Motions of the child not characteristic. Pupil of the left eye does not contract. Knee jerks are equal and present. Baby's temperature 102° by rectum. Pulse 120. When the baby is touched he cries out. Spit up a small amount of blood. Diagnosis: Cerebral hemorrhage. Condition has become so grave that there is no question of any operation. It died early in the morning of January sixth. Mother made an excellent convalescence and went out of the hospital well on the fourteenth day. She was advised on going out, to place herself, if she ever became pregnant again, under our charge early, so that we could follow the size of the baby and be guided as to what would be advisable. (See Cases 35 and 36.)

Summary of the Technique of Forceps Delivery.

The preparations for an operative delivery are the same as for a normal delivery, with the addition of a pair of forceps in the instrument layout. I boil my forceps for every delivery so, in fact, there is no change. The patient is prepared in the same way. The position in this country is usually the dorsal with the legs held either by a leg holder or by assistants, trained or untrained, as the case may be. If the dorsal position is used, do not put the patient in the exaggerated lithot-

omy position because in this position the perineal muscles are made more tense than if the legs are simply held at right angles to the body. One's inability to change the position of the legs without difficulty is the one objection to the Robb leg holder. If the leg holder is used towels must be put at the popliteal spaces and behind the neck in order to keep unnecessary pressure from the legs and neck. More than once have I heard patients bitterly complain of pain from pressure at these points after an operative delivery when these precautions have not been taken.

For every operative delivery an anesthetic must be used. Whether it is ether or chloroform depends entirely upon how the individual physician feels. I know of no valid reason why ether should not be used. Recent experimental work would make it appear that chloroform is a source of danger. It has no real advantage over ether and I therefore always use ether. After the patient is under ether and in position she should have one final scrubbing up with soap and water by the nurse. Before the nurse scrubs the patient up she should wash her own hands thoroughly. Care must be taken not to use a great amount of water in the preparation. She should use the same care that was described in the preparation for a normal delivery. The soap and water is washed off either with sterile water or corrosive sublimate solution 1–3000 and the preparation finished with 70% alcohol. The objection to the use of alcohol is the expense, and to corrosive, that in some patients it causes a dermatitis which is most annoying. After the patient is in position and prepared, the sterile pad which comes in the obstetrical package is placed beneath the patient's buttocks. If there is no pad a sterile towel is used instead. Over the pad is placed a towel and this goes underneath the buttocks and is held in place by the patient's weight. Towels on the flexed legs add to the completeness of the operating outfit but there is no real necessity for them for if a physician cannot operate without touching the adjacent legs he ought not to be allowed to operate at all. I do not have a towel put upon the abdomen because I like to be able to see the nurse's hand as she follows down the uterus. The next step is to catheterize the patient.

A soft rubber catheter only should be used before delivery and this must be thoroughly boiled. The meatus is first wiped off with 1–3000 corrosive and then the catheter placed directly into the meatus touching nothing but the meatus. Many times in pushing the catheter in a little way it will meet an obstruction. Never try to force a catheter. With a finger in the vagina along the course of the urethra gently guide the tip between the presenting part and the symphysis. If the presenting part is too close push it up a little way and then gently push the catheter in further. Absolutely no force must be used and unless you can catheterize without force it is better to let the patient go without catheterization, especially when the head is so low. When the urine comes, leave the catheter as it is and after it has stopped flowing pull the catheter out a little way and very often more urine will come away. Many times it will be advisable to ask the nurse to press down over the bladder region to help empty the bladder. When all the urine has ceased running pinch the catheter and gently remove it.

The next step is the dilatation of the perineum. If the head is very low, directly on the perineum, you will be able to do nothing more than to insert the fingers slowly into the vagina and gradually stretch the perineum a little more. If it is so tight that you cannot get in with any degree of safety without rupturing the perineum, the dilatation takes place after the forceps are on and the extraction is beginning. If this latter can be avoided, much better results will be obtained if complete dilatation of the perineum is obtained before the head is brought over it. A method that has been very successful in my hands is as follows: two fingers of each hand, the index and the middle fingers, are inserted slowly and carefully into the vagina, the pulp of the fingers downward on the perineal muscles. The dorsal surfaces of the fingers are brought together in the median line; the fingers are then flexed from the metacarpo-phalangeal joints. This flexion gives pressure downwards and outwards on the levator ani muscles and gradually the perineum is stretched. This must be accomplished without tearing. If the head is very low the whole hand cannot be inserted unless the head is pushed

up. If the head is very firmly wedged down it generally is not advisable to force it back, but to complete the dilatation slowly by means of the head alone. Gradually and slowly the entire hand is inserted. After getting in the entire hand the fist is clenched and the posterior surface of the wrist held at the symphysis and the fist is then flexed slowly out of the vagina. In this way the perineum is put on the stretch in a manner which approximates the way the head stretches it. Several times the perineum is thoroughly stretched in this manner until the fist can be readily brought out over the perineum. Objection has been made to stretching the perineum in this way, some physicians claiming that the process tears the perineum. Unquestionably at times it may, but in those cases where a tear occurs in the dilating, provided the dilating is done without haste, undoubtedly the perineum would be torn if it were not stretched. I am confident that the tears after a thorough dilatation of the perineum are very much less than in cases where the perineum is not stretched. Another objection is made that it takes time to dilate the perineum completely. It does take time, but it takes less time to dilate a perineum thoroughly and completely than it does to sew up a bad tear afterwards. The skin is not only thoroughly stretched, but the muscles as far back in the outlet as the fingers can reach are also thoroughly dilated. After the dilatation of the perineum is completed and before the forceps are applied the os uteri must be examined. It is obvious in many cases that forceps deliveries are undertaken before the os is fully dilated. If this is done the danger to the patient is much increased because the liability to severe cervical tears is great. If the os uteri is not fully dilated it must be dilated up carefully and as fully as possible with the hand. (Cases 18, 20, 21, 44, 51.) After full dilatation is obtained draw the closed fist through the cervix at least three times so that there will be no resistance or at least as little as is possible from the cervix. Some operators apply forceps through a cervix which is not fully dilated. Unquestionably it can be done. Forceps can be put on as soon as the cervix is dilated enough to admit the passage of the blade. If forceps are put on in this way, then as traction is made downwards,

pressure upwards on the anterior and posterior lips of the cervix is made with the fingers of the hand that does not hold the forceps. If the anterior and posterior lips are not pushed back there is too much pulling downwards on the uterine supports and in my opinion more serious tears are apt to occur than when the cervix is dilated at first and before the forceps are put on. Case 18 was dilated in this manner and no untoward symptoms arose when she was up and about. The beginner, however, should not attempt a forceps delivery until the os is fully dilated. If he thinks delivery is indicated he had much better send for help than to attempt it himself.

The perineum and cervix fully dilated, the next step is the rupture of the membranes if they have not already ruptured. Rupture them either with the finger or with a rat-tooth forceps. As the liquor comes away note whether it is clear or meconium stained or whether meconium unmixed with liquor appears. If it is the latter it is presumptive evidence that the baby is in serious danger and a speedy delivery is indicated. If the liquor is meconium stained it is suggestive of past danger, provided the fetal heart is now regular in rate and rhythm. (Case 16.)

Successful operative obstetrics cannot be done unless the position of the child in utero is accurately determined. In determining the position of the child, palpation of the abdomen before the question of operative procedure has come up, is of marked help, but palpation alone must never be relied upon. The simplest of all forceps deliveries is where the head is on the perineum, the sagittal suture is in the antero-posterior diameter of the pelvis and the anterior fontanelle is not felt. (Case 15.) In such cases as this where the head is so low that an ear cannot be felt, one must rely entirely upon the relation of the fontanelles and sutures to the mother's pelvis. The posterior fontanelle is made, as everybody who is attempting to do obstetrics must know, by the junction of two sutures, the lambdoid and the sagittal. It is three cornered and small. The anterior fontanelle is diamond shaped, larger and is made by the junction of the coronal, frontal and sagittal sutures. Joining the two fontanelles is the sagittal suture and it is the relation of this sagittal

suture and the fontanelles to the antero-posterior diameter of the mother's pelvis that tells one whether the occiput is fully or only partially rotated to the arch of the symphysis. Even knowing the fact that the anterior fontanelle is diamond shaped in a hard labor where there is much overlapping of the sutures, it is very difficult, almost impossible at times, to settle which fontanelle one has to deal with. For this reason other landmarks must be sought. The usual landmark sought is the ear. The examining finger sweeps over the ear and you determine whether the auricle points anteriorly or posteriorly by getting the finger behind it and trying to fold the ear over on itself.

Case 15 shows the simplest forceps delivery that can take place. The occiput is fully rotated, head on the perineum. The cervix is not felt. The forceps are held in front of the vulva as they are to be applied to the child's head. The left blade, the one with the lock, is then taken and held in a vertical position with the tip downwards so that the cephalic curve of the forceps is parallel to the contour of the head of the baby. Whether the handle is held as a scalpel, or whether it is held with the whole hand, to me is immaterial. The fundamental point, more important than how it is held, is that in the application no force must be used. There are three points in the pelvis, with a low head, where the forceps can be applied most easily. Either directly backwards towards the hollow of the sacrum or towards the left or the right sacro-iliac synchondrosis. If these three places are remembered and the application of the forceps always begun in one of these three places, any part of the head in any position can be reached from one or the other of these three places. The blade is then inserted along the gloved fingers of the right hand so that the danger of carrying any infection from the vagina is reduced to the minimum. In passing it should be stated that the blade must never touch the vulva before it is put inside the vagina. The handle is then dropped downwards, remembering always that the blade has the pelvic as well as the cephalic curve. Judgment and experience alone will tell whether the blade is in position. The left blade in position, placed by the left hand, the right blade

is then taken in the right hand, held in a corresponding manner and is put in the vagina towards the right sacro-iliac synchondrosis and swung up into place opposite the first blade. The first blade is placed always where your best judgment tells you you want it. That blade, placed and held steady at one point, is always used as the guiding blade and the second blade is put on to lie opposite. If the first blade is rightly placed, the second must be approximately right or otherwise the blades would not lock. The blades applied, the fetal heart should then be listened to in every forceps delivery. The importance of this was seen in Case 20 where the cord was down beside the head and it would have been a very easy matter to pinch the cord by the forceps, an accident which is not very uncommon, though sometimes not admitted as the cause of the death of the baby. In Case 15 there was no question whether the forceps were put on inside or outside of the cervix as the cervix could not be felt. In all cases the forceps must be put on inside the cervix. The danger is so obvious, should the forceps be applied outside the cervix, that no comment is necessary. Case 18 shows the care that is to be taken in avoiding the cervix when the os uteri has not retracted beyond the head.

The application of both forceps blades with one and the same hand is many times readily done, but the beginner, until he is very familiar with the application of the forceps with two hands, should not attempt it. The technique used in applying the second blade is totally different from that where two hands are used. The beginner must master the usual technique of using two hands and when this is accomplished the technique of using the one hand for the application of both blades he can readily work out himself.

Forceps applied, the first traction should always be tentative to see whether or not the forceps slip. To determine whether any slipping of the forceps takes place, put the index finger of one hand on the occiput and note the distance between the occiput and the lock of the forceps. If this distance increases then the forceps are slipping and must be reapplied. Properly applied the forceps slip but very little.

The first traction is practically always downward and outward until the occipital protuberance is sunk beneath the arch. In Case 21 much traction downward was necessary before the occiput was brought low enough so that extension could take place. If the head is extended too soon the occiput may exert such pressure on the arch of the symphysis that the joint will rupture.

Traction and compression must be intermittent, approaching as near as possible the action of the uterus. All traction, every motion, in a forceps delivery must be slow and deliberate, never a sudden motion. In Case 22 traction was applied and a sudden jump of the head by the promontory took place. Fortunately no serious damage was done to the maternal soft parts, but such sudden movements are wrong in elective forceps deliveries.

As the head distends the perineum, press, with the finger, as described in normal deliveries, on the baby's scalp to determine the condition of the baby. If the circulation is good go very slowly with the extraction. Let the head recede, take all pressure off the perineum and allow the circulation in the perineum to be sufficient. If the circulation of the scalp be poor, hurry the extraction even to the degree of obtaining severe lacerations. The more skillful the operator, the better judgment he shows in operating, the slower will be his operative deliveries. Serious lacerations usually come from hurried bungling operations.

Whether the operator removes the forceps before the head is delivered is usually a personal matter. The beginner will many times take the forceps off only to find the head recede and a re-application becomes necessary. With a tight perineum if the forceps are removed you do gain a little more room. Before you remove the forceps take a sterile towel on your left hand and press upwards behind the anus. If by this step you see you can deliver the head, swing the thumb of the left hand up to the head and hold it at the point to which it has come. Now take off the right blade, reversing the motions by which it was applied. The same is then done with the left blade. If the blades come off readily, well and good, but do not pull and use force. Never remove the

blades unless you have your hand against the head; for a contraction of the uterus might come and force the head quickly over the perineum and a serious laceration occur. The head delivered, the same steps follow as in a normal delivery.

The higher the head in the pelvis the more dangerous may be the delivery. The reader is referred to the several text books for diagrams of the different planes of the pelvic cavity and explanation of the course the head takes in its passage through these planes. It is beyond the scope of this book to go into these problems. A full understanding, however, of these planes and of the mechanism of labor must be had for successful operative obstetrics.

Case 17 shows that it is possible to deliver cases where the rotation of the occiput is but half completed with but one application of forceps. Had the forceps in this case been applied to the sides of the pelvis irrespective of the position of the head, as is advised so often, the difficulty in the delivery would have doubtless been much increased. If the rotation of the occiput is completed to the transverse diameter of the pelvis or more, the delivery takes place with one application. If there is no rotation forward, or not to the transverse diameter, the double application is best as is seen in Case 19. Here the position was occiput left posterior, unrotated, the head was high, practically floating and a double application was necessary. With the second application the head was brought down into the pelvis and rotated to the arch. The forceps, therefore, became completely reversed. They were then removed and were reapplied to the fully rotated head. Always, before you begin the second application, examine to make certain that the occiput has not slipped back into its first position.

With unrotated posterior positions, it is always best, if possible, to rotate manually the occiput anteriorly before any attempt is made to apply the forceps. In left positions the right hand is used to rotate the occiput forward and in right positions the left hand. In right positions the right blade should be applied first for when it is applied it can many times be so held that it will prevent the occiput from slipping

back. (Case 21.) The same holds true in left positions where the left blade is first applied. When the right blade is applied first it comes to lie below the left one and in order to lock the blades it must be raised up and rotated about the left blade which then is slightly depressed.

In all cases where the biparietal diameter of the child's head is not well through the inlet of the pelvis, pressure on the head through the abdomen by the assistant should be given in order to steady the head as the application of the forceps takes place. (Cases 19, 21.) The head is grasped by the assistant with his thumb and forefinger. Too great pressure must not be used for this increases the difficulty of applying the blades. The assistant, as the blades are applied, readily feels them come up into place. When locked he removes all pressure and then listens to the fetal heart. I speak of an assistant as if it always were possible to have one with you. I realize full well the difficulty in country places of obtaining anyone to help outside the immediate family, but I nevertheless feel that the risk physicians take is oftentimes unnecessarily great. In these days of farmers' telephones and automobiles, with a little planning, help may be obtained if it really is wanted much oftener than it is sought. Oftentimes personal animosities are the reasons for not seeking outside help but such trivial reasons should be put aside in serious work.

The object of all traction-rods on forceps is to obtain traction as nearly at right angles as is possible to the plane in which the head lies. Therefore, the higher the head is in the pelvis the further back towards the perineum is the traction needed. Experience alone will tell how to exert this traction and when to change the direction of it. Intelligent watching of a skillful operator, who will explain the various steps as he operates, is an excellent method of learning some of the points. Manikin work is of great aid but experience on the living subject must be obtained before any one can be skillful.

High forceps work, that is, where the biparietal diameter of the fetal head is not through the brim of the pelvis is unreservedly condemned by certain obstetricians. I have never seen any reason for such a sweeping condemnation. High

forceps where there is no disproportion between the fetal head and the pelvis is an excellent operation in careful hands and never will be given up. Cases 19, 20 and 21 were all high forceps applications but there was no disproportion present. All made excellent recoveries, the babies all are now living and well, and the mothers show no disabilities. Forceps deliveries when there is disproportion are dangerous and should not be done. Case 22 is an excellent example of a forceps delivery of necessity, with bad results, though even here the result might have been worse. This patient refused to allow any "cutting" operation. Version in a tight uterus, tightly contracted about the baby was contra-indicated and there was nothing left but forceps or a destructive operation. I elected to attempt forceps with the result above described. It is from such cases as these that the high forceps operation receives its bad name and rightly so, but even in these cases it is not an unjustifiable operation. The fault lies not in the operation but in the time when the operation is by necessity done.

Case 20 should have been managed differently in the early part of the case. Insertion of a Voorhees bag when labor was found to be inefficient would have materially shortened this labor. The patient would in all probability have been in much better condition after such treatment than she was after the operative delivery to which she was subjected.

There are many indications for forceps deliveries as is seen from the above cases. They can be classified as in the interests of the mother, or of the child, or of both.

Lack of progress is the usual cause for delivery. The more skillful the operator the sooner is he justified in operating. If a physician by operative deliveries obtains severe tears, sepsis or injuries to the baby, he must study his cases more carefully and see if he is justified in operating so quickly. It is a well established fact that the greater part of gynecological operating is due to bad obstetrics. It is a terrible arraignment of past and present obstetrics. The beginner, if the patient is in the second stage two hours without any progress, as shown by the descent of the head, may consider operating. If progress is made, the beginner should let nature

take its course. The teaching of obstetrics in this country should be so improved that all physicians on graduating will be capable of doing simple low forceps work without morbidity.

Reference to the above histories shows typical reasons for interfering. There is in all a similarity. One might ask in Case 16 why interference was not undertaken earlier because of the irregular fetal heart. I felt that I might have to interfere at any moment and for that reason sent for an assistant early and had everything ready for a quick delivery, but I realized the cervix, which was not fully dilated and thick at the first examination, might make the delivery very difficult. I therefore waited hoping for an easier operative delivery and that the fetal heart would straighten out. Fortunately it did so, but had it not, preparations were complete for interference.

Watchfulness is of prime importance in obstetrics. Had Case 20 been watched more intelligently the physician in charge would never have diagnosed a placenta prævia for an edematous anterior lip of the cervix. Be prepared to operate any moment; operate only when the indication is real, not fanciful. Realize that many women of the so-called better class will not stand a long hard labor with impunity and if you are not competent to interfere early in these cases send for help early.

The question may be raised here why pituitrin or hypophysin was not used in several of these cases where the powers of expulsion were not quite sufficient to accomplish delivery. In cases where there is no obstruction to delivery, and where the soft parts are easily dilatable, it is permissible to use one of these preparations. Both of these preparations cause hard uterine contractions, but they may be of the long-continued tetanic type which is dangerous not alone to the baby but also to the mother. When there is disproportion present between the pelvis and the fetus the danger is very great. If there is no disproportion, but the soft parts are rigid and not dilated danger again is present. Severe lacerations, ruptured uteri, asphyxia of the baby may be looked for when these latter conditions are present. Few obstetricians use

these preparations to any great extent. I am constantly finding general practitioners using them to hurry the delivery. They admit the tumultuous type of labor these preparations cause, they admit the lacerations have been severe in many cases, but as long as their time is conserved and they have no serious accident with the mother they apparently do not care. Pituitrin or hypophysin unquestionably will shorten labor, but except in the type of case in which I have already agreed to their use, they are dangerous and in the hands of the unscrupulous will cause much suffering.

SECTION V.

BREECH DELIVERY.

Case 23. MULTIPAROUS BREECH DELIVERY. Patient is seen for the first time November 20. She says she is five months advanced in her fourth pregnancy. The first day of her last menstruation was June 19; delivery is therefore due from the twenty-third to the twenty-ninth of March. Her first pregnancy was terminated by a forceps delivery. In her second and third labors she delivered herself. The children weighed between eight and eight and a half pounds. She is in excellent physical condition. Present pregnancy has progressed normally. Blood pressure is 110 and urine examination is normal.

March 14. Up to the present time there is nothing of interest to note. To-day she is seen and says that for the last ten days she has noticed that she has indefinite sensations of discomfort low down in the region of the bladder accompanied by a very frequent desire to pass urine. She says she "feels as if there was motion in the vagina." When this "motion" ceases the desire to pass urine disappears. Urine analysis was negative.

PALPATION: — Firm smooth resistance is on the right; small parts felt on the left. At the fundus is a definite hard round mass which is readily outlined. Ballotment is readily obtained. There is no presenting part engaging in the pelvis. Fetal heart is best heard in the right lower quadrant, 120 to the minute.

Diagnosis: Breech presentation; the history suggests a footling.

The remainder of this pregnancy is not remarkable except for the discomfort of the "motion" in the vagina, which at times necessitated the patient voiding urine occasionally as often as every fifteen minutes for one or two hours. Blood pressure has at no time been over 120 mm. of Hg.

March 25. At 9:30 P.M. patient began to have a few indefinite pains at irregular intervals. At ten the nurse reports that the pains began coming every five minutes and were of forty-five seconds duration. I went to the patient at once. Palpation confirmed the previous note. Fetal heart 130, regular, heard only in the right lower quadrant. At eleven, the membranes ruptured. Fetal heart listened to at once and found the same. Vaginal examination made and the os found fully dilatable and very soft. Anterior lip of the cervix found low in the vagina and there is a feeling of fullness between the anterior lip and the symphysis. At the os small parts are felt presenting. It was suggested to the patient that she try to void her urine. She did so at once and voided ten ounces of urine.

Pains now came every three minutes and lasted one minute. Fetal heart was listened to every fifteen minutes and remained regular at 130. At five minutes of twelve a foot appeared at the vulva. Up to this time the patient had been lying on her left side. She now was turned on her back across the bed with her buttocks on the edge and her feet resting in a chair. Obstetrical ether was given with each pain which came every two minutes and lasted a minute. A second foot at once appeared. Ether was forced and patient held in lithotomy position and fundal pressure by the assistant accompanied the delivery of the body. The baby's legs were simply supported and on the next pain the buttocks appeared and the body followed. The cord was found pulsating. Both arms were found flexed on the chest and were readily drawn down. The body came down in the right oblique diameter and was held in this diameter. Patient was now fully under ether and with the aid of suprapubic pressure the head was at once born. The baby cried immediately. Ether was now stopped. There was a very slight tear of the perineum. The cord was clamped and cut. Perineum was repaired with one silk worm-gut suture. Placenta came away intact with all the membranes on the third pain. Uterus remained well contracted and was held for twenty minutes. The baby weighed eight pounds and two ounces. The puerperium was absolutely normal and the patient got up on the twenty-first day.

Case 24. PRIMIPAROUS BREECH DELIVERY. The patient is a primigravida, twenty-three years old, five months advanced in her pregnancy. There was nothing of interest to note as her pregnancy advanced. Blood pressure was never over 120 mm. of Hg. All urinary examinations were normal.

Palpation at the beginning of the ninth month showed a small baby, head presenting, in a left position. Fetal heart heard in the left lower quadrant. Measurement of her pelvis gave crests 26 cm., spines 25 cm., external conjugate 20 cm. Two weeks later she is again seen and volunteers the information that three days before there was a great deal of motion for a time and that she thought the baby had "turned over." Palpation now showed small parts on the left, marked resistance on the right and head at the fundus. Fetal heart is not heard, fetal motion is seen. Presenting part is free above the brim of the pelvis.

VAGINAL EXAMINATION: — Cervix soft, partially taken up and the external os admits one finger. Presenting part can just be reached. Contour of the true pelvis is normal. Biischial diameter is 10 cm. with Williams pelvimeter. Small-boned woman. My note at that examination says "at the present time the baby does not weigh more than seven pounds and if delivery takes place when due there seems to be no reason why the baby will not come through without difficulty."

Ten days later I received a telephone message at 2:50 A.M. saying that the patient had just been awakened by the waters coming away. I went to her at once and when I arrived at 4:30 A.M. she was having definite uterine contractions at fifteen-minute intervals lasting but thirty seconds. Fetal heart at once listened to and was heard at the umbilicus 120 to the minute, loud and regular. Palpation gave the same findings as previously. She was prepared in the usual manner (see page 107) and then examined. Cervix was taken up, os dilated one inch, frank breech readily reached by examining fingers, no cord felt. At six o'clock pains were coming regularly every eight minutes lasting from 45 seconds to a minute and a half. Uterus relaxed well between pains. The patient was kept in bed because liquor came away with

each pain. Patient's pulse was 70. Fetal heart was now listened to every half hour and it remained regular at 120. By half past ten the pains were coming every two minutes and lasting one minute. Vaginal examination now showed the breech in the mid-pelvis, posterior lip of the cervix not felt, anterior lip thin but readily felt. The pains became more severe and the patient began to bear down with each pain. At eleven she began to complain that she had stood about all she could and wanted ether. Uterus was relaxing well between pains; it was not tender on palpation. Fetal heart stayed regular and was listened to every fifteen minutes. She was now given obstetrical ether and obtained much relief. The pains continued to come regularly and with each pain she worked well. During a pain the fetal heart ran up to 140 but at once dropped back to 120 and remained regular. Patient's pulse during pains would rise to 100 but then drop to 80.

With obstetrical ether she was carried along, at no time losing consciousness, until quarter past one when the breech appeared at the vulva. Perineum now bulged with each pain. No variation in the fetal heart. For the next hour she made but very slight progress. Fetal heart now began to be 140 and occasionally during a pain it ran up to 160. Because of the lack of progress and the slight rise in the fetal heart I decided upon delivery.

Patient now was etherized by an assistant whom I had sent for six hours before. She took ether badly, vomiting several times, but each time she vomited she pushed the breech further down onto the perineum and stretched it up considerably. She was placed in moderate lithotomy position and when under full anesthesia prepared in the usual manner. The perineum was thoroughly dilated. Bladder catheterized. Position S. D. P. Index finger of left hand hooked around the anterior groin and with traction downward the anterior buttock was brought into view. Index finger of right hand readily reached the posterior groin and with downward traction and lateral flexion the buttocks were delivered. It was then seen that the legs were fully extended on the baby's abdomen. Traction downward was continued and when

the right knee appeared flexion freed the right foot. The left foot was then freed in a similar manner without difficulty. The baby's back was directed slightly backward to the patient's right side. Both hands now seized the baby's pelvis with the thumbs on the sacrum. The baby was rotated slightly to the right so that the shoulders came down in the right oblique diameter and they were kept in this diameter. Traction at first downward and then slowly and gently upward brought the spines of the scapulæ into view. The legs were then lifted upward and outwards to the patient's left by my right hand and with the left hand the perineal arm was readily delivered. Grasping the legs with my left hand and drawing them down and outward towards the patient's right, with my right hand over the anterior shoulder I swept down the right arm, the anterior, which was extended, over the face and the perineum. Care was taken not to let the baby's abdomen rotate anteriorly. The baby was then placed on my right forearm with the legs astride my arm. With two fingers of my left hand on either side of the child's neck, palm downwards, I made traction downward. At the same time the etherizer gave me intelligent suprapubic pressure. The chin at once appeared at the perineum and the body was lifted upwards and the head was born without any difficulty. After the birth of the child the cord was found pulsating and in a few seconds the baby gasped and soon cried lustily. The cord was tied and cut. There was no bleeding. Examination of the perineum showed a median perineal tear only about half an inch deep but extending skin deep down to the sphincter muscle but in no way involving the muscle itself. One chromic catgut suture placed deep and tied brought the tear well together. Three silkworm-gut sutures were then placed and brought the skin into excellent approximation. Finally a chromic catgut stitch was placed just above the sphincter to hold the skin in absolute approximation. Before the silkworm-gut sutures were tied the placenta was delivered and examination showed it to be intact with all the membranes. The baby weighed six pounds and fourteen ounces.

The uterus acted well and there was no bleeding. Pulse

110 and good quality. At 5:30 the patient began to have a severe chill, which lasted until controlled by morphia, gr. 1/6, for ten minutes. Pulse at the end of this chill was 120, volume distinctly poorer than before. Uterus stayed hard and no bleeding present. At 6:30 she was in excellent condition, breathing regularly, of good color, pulse 110, regular and of good volume. Temperature 100°. I left her at seven o'clock, both she and the baby in excellent condition.

First day. Temperature this morning 99°, pulse 90. Slept but little last night. Voided early this morning. Uterus well contracted and not tender. Lochia normal. Stitches look well. No edema present.

Second day. Morning temperature 98°. Pulse 72. Evening temperature 99.4°, pulse 82.

Third day. Morning temperature 97.8°, pulse 72. Patient is in excellent condition. Uterus three finger breadths below the umbilicus, hard and not tender. Lochia normal. Except for slight hoarseness which she has, is very comfortable. There is no sign of any milk in the breasts. Bowels moved to-day by castor oil given early this morning. Evening temperature 98.6°, pulse 74.

Fourth day. Morning temperature 98.8°, pulse 84. Last night she was reported by the nurse as having a hacking, irritating cough for which she was given codeia sulphate, gr. 1/2 intramuscularly, with marked relief. Patient can speak only in a whisper. Examination of throat shows markedly reddened pharynx. Examination of abdomen negative. Examination of the lungs shows that a definite bronchitis is present.

From now until the tenth day the patient ran an irregular temperature varying from 99° to 101°, the pulse running from 70 to 100. The bronchitis gradually cleared up. At no time did the patient appear sick. The uterus involuted well; there never was any abdominal tenderness and the lochia was at all times normal in character.

From the tenth day she made a steady improvement. Pulse and temperature came down by lysis and on the tenth day became normal. The stitches were removed on the tenth day and the perineum apparently was well healed,

except just above the anus where there is a slight separation of the skin and there is a small cavity present with a dirty base. A very small sterile gauze wick was packed into this cavity morning and night by the nurse and in four days it was solidly healed.

Convalescence was now uninterrupted and she got up on the twenty-first day. The final examination was made in the sixth week. Lungs were found to be clear. Abdomen negative. Excellent result on the perineum, slight bilateral tear of the cervix, lateral fornices equal but are shallow. Uterus normal in size and position, freely movable, no tenderness. There is no vaginal discharge. Breasts are normal. Baby's umbilicus is healed. Movements are normal.

Case 25. BREECH EXTRACTION. DRY UTERUS. CONTRACTION RING. Patient is seen in consultation Sunday, September 24th, at eight in the morning. The following history is obtained from the attending physician: — The patient is a primipara who has been in labor some thirty hours with a breech presenting. Rupture of the membranes had taken place coincidentally with the beginning of labor, early Saturday morning. All day Saturday the patient had a slow, nagging labor. Dilatation was accomplished very slowly, accompanied by a leakage of the amniotic fluid. She had become fully dilated about two A.M. Sunday morning and after a hard second stage the physician decided to deliver her at about six A.M. She was etherized, but all attempts he made to accomplish delivery were futile. He said the uterus was contracted so tightly about the child that it was impossible for him to get up far enough into the uterus to reach a foot and with a finger in the groin he was unable to deliver the baby. He ceased his efforts at a little after seven and telephoned for me to come out to help him.

At eight o'clock the condition I found was as follows: —

A large, heavy woman partially under ether. Pulse 120, of good volume and regular. The uterus was tight and tender on palpation especially tender just above the pubes. The fetal heart was not listened to. No further examination was made. Immediate delivery was indicated.

While making the necessary preparations I told the husband that the chance for a live baby was only of the remotest possibility and that the patient's condition was grave. As soon as possible she was again put well under ether, placed in the dorsal position and the vulva carefully cleaned up with 70% alcohol. Examination showed that the perineum had been torn to the sphincter, the circular fibers of which were readily seen. A frank breech was presenting in S. D. A. position at the pelvic inlet. The os was fully dilated. Just beyond the os the examining hand came to a tight ring which was felt completely encircling the breech. With moderate pressure I attempted to push my hand by this ring but with the force I felt justified in using I could not. The uterus was so firmly contracted that there was no possibility of pushing

the whole breech upward to gain room. I could just reach the anterior groin but with the traction I could get by means of a finger there was no gain. The posterior groin I could not reach. I then placed in the anterior groin a blunt hook. With strong, steady traction downward the anterior thigh was brought to the vulva. The blunt hook was removed and with a finger in the anterior groin and one in the posterior, traction downward was again begun but without success. The blunt hook was again placed in the anterior groin. Strong traction brought the breech still further down and the femur then snapped. With a finger in each groin the buttocks were then delivered. Both legs were fully extended on the baby's abdomen. When the popliteal spaces appeared the knees were flexed, first the anterior one and then the posterior one and the feet were readily delivered. Neither arm was extended and first the perineal arm and then the anterior arm was readily delivered. Considerable traction was necessary to deliver the head but on the second attempt with the help of excellent suprapubic pressure it was accomplished.

The baby was pale and limp and was given the attending physician to resuscitate. It breathed soon but did not cry.

Patient's pulse was reported as 120 and of poor quality. There was not time to make a careful repair of the perineum. I quickly placed and tied two No. 2 chromic catgut sutures in the deep perineum which brought the internal tear fairly well together. I then placed rapidly three silkworm-gut sutures. The placenta was then delivered intact with all the membranes. The silkworm-gut sutures were then tied. No douche was given. Sterile pad placed over the vulva and the patient turned about in the bed and surrounded by hot-water bottles. The fundus was carefully held for one hour. The pulse slowly but steadily improved in character, the rate remaining 120. She made an excellent recovery from ether with no vomiting.

The baby continued to breathe regularly but did not cry. Its respirations were very shallow and rapid, and it was limp and pallid. It was in no condition to be handled and as the fragments of the femur were readily held in apposition by

flexing the thigh on the abdomen the leg was thus held in place by a cotton roller bandage. The leg and body were first oiled and then covered with absorbent cotton. It was very evident that the baby would not long survive the difficult delivery and about noon it died.

On September 29th the attending physician telephoned that the patient was making an excellent convalescence. On the night of the delivery the temperature rose to 102.6° and the pulse stayed 120. The next morning the temperature dropped to 99° and the highest it reached thereafter was on the second day when it was 100.2°, with a pulse of 95. Since then until now the temperature has been normal and the pulse varied from 80–90. Except for a slight amount of edema the perineum is looking very well.

October 20th the physician telephones the patient has made an uninterrupted recovery. The perineum has healed well. As yet the physician has not examined her vaginally. She is up and about the house with no discomfort in the perineum and without any discharge.

Case 26. PRIMIPAROUS BREECH EXTRACTION. January 25. A telephone message from the attending physician at eleven-thirty in the evening saying that he had a "primipara in labor, a breech presenting, that the patient had become fully dilated at eight and was now making no progress and that he thought she ought to be delivered."

I saw the patient at one A.M. January 26th and obtained the following story: — Her pregnancy had been normal with the exception that from the seventh to eighth month her legs and lower abdomen had become very edematous. The urine at this time was negative and nothing wrong was found in the heart. The only explanation that the physician could offer for this condition was the fact that she had worn her corsets extraordinarily tight for a woman so far advanced in pregnancy and when he forbade their use entirely the condition gradually cleared up. The patient started in labor at eight o'clock the morning of the twenty-fifth with contractions coming slowly and without force. At this time there was a slight show. At one P.M. the pains began coming every five minutes and lasted from one and a half to two minutes. From then until ten P.M. the pains continued coming at this rate, and there continued to be a slight show. Vaginal examination by the attending physician at this time showed the breech still high. The posterior lip of the cervix could not be reached but the anterior was readily felt. At eleven o'clock the pains began to die out, coming only once in ten minutes and lasting but from one-half to three-quarters of a minute.

When I saw her at one A.M. the pains were coming the same as last noted. The uterus contracted well, relaxed only fairly well between pains and on palpation was markedly tender, especially below the level of the umbilicus. No retraction ring was palpated. Head was readily palpated at the fundus. Fetal heart was definitely heard an inch to the left and above the umbilicus, 150 to the minute and slightly irregular. Patient's general condition is satisfactory, pulse of good volume, 90 to the minute.

VAGINAL EXAMINATION: — Introitus edematous, pelvic walls soft and apparently edematous. Anterior lip of the

cervix is caught between the descending breech and the symphysis and is very edematous. Without ether it could not be pushed up. Posterior lip not felt. Breech is at the inlet. No membranes can be felt. The pelvis is not contracted.

Operative delivery was advised and accepted by the patient and her husband. To the latter a guarded prognosis was given for the baby because of the long second stage with ruptured membranes and for the mother probability of severe lacerations.

I watched the patient through two pains while the preparations for delivery were completed and there was no gain made.

When the preparations for delivery were entirely completed the patient was put across the bed and etherized. Each leg was held by a nurse, the patient being in moderate lithotomy position. The vulva was carefully prepared after the patient was etherized.

The perineum was carefully dilated, but before it was possible to get one's hand inside the vulva the external perineum tore like blotting paper to the sphincter. Perineum dilated, the anterior lip of the cervix was then readily pushed up from between the breech and symphysis. The position was S. L. A. and the breech was at the pelvic inlet and was without difficulty displaced so that the left hand at once reached the anterior thigh. This was followed up until the popliteal space was reached. The femur was then pushed inwards onto the baby's abdomen. The heel dropped downwards and was at once grasped. No contraction ring was present. The anterior leg which was the one seized was brought down without difficulty. As the buttocks appeared at the vulva the tear in the perineum increased. The right index finger was hooked into the posterior groin and by combined downward traction on the left leg and posterior groin the buttocks were delivered with but slight difficulty. The transverse diameter of the baby's pelvis was kept in the left oblique diameter of the mother's pelvis. The baby was grasped about the pelvic girdle with the operator's two thumbs side by side over the baby's sacrum. By lateral flexion and traction downward the spines of the scapulæ appeared at the vulva. The legs were then with the left hand drawn upward and outward to

the patient's right side giving more room at the perineum to seek, with the right hand, the baby's right, or perineal arm. This arm was partially extended and it was delivered with a great deal of difficulty. The baby's feet were then grasped by the right hand, drawn downward and outward to the mother's left and with the left hand, the anterior or left arm was sought. It was found fully extended, and as I went up over the anterior shoulder to the arm I was unable to bring it down. With my left hand over the anterior shoulder and my right hand below the right shoulder I turned the baby from right to left. By this turning the anterior arm, the left, was made the perineal. The legs were then held strongly upward and outward to the patient's left and with the left hand the arm was then readily delivered. From the time the operator's hand was pushed upward through the cervix until the delivery of the arms was begun, strong pressure was given by an assistant on the fundus. The arms delivered, the baby was grasped in the same manner as described on page 177, except that it was placed on the left forearm. With combined traction and suprapubic pressure the head was brought well down into the pelvis. On the second traction downwards and with two fingers on the floor of the baby's mouth to gain all the flexion possible the head was delivered. The cord was pulsating and the baby gasped at once. It was thoroughly drained and in a few seconds it cried. The baby moved both arms and legs well. The cord was tied and cut and the baby put safely away.

Examination of the perineum showed a deep tear on the patient's right, the sphincter was torn through and the tear extended one-half inch up into the rectum.

The cord, wrapped in a sterile towel, was pulled taut and held out of the way and above by the nurse. A gauze sponge soaked in 70% alcohol was placed in the vagina to keep the perineal tear in clear view. Perineal tear wiped off carefully with 70% alcohol. Two No. 1 plain catgut sutures were passed through the edges of the rent in the rectum and tied on the rectal side. Two buried No. 2 chromic catgut sutures were then placed, bringing together the deepest portion of the perineal tear. Four No. 2 chromic catgut interrupted

sutures were passed from the vaginal mucous membrane surrounding the tear and brought out on the opposite side of the tear in the vaginal mucous membrane. The highest suture was placed first and tied, then in turn the three others; these approximated the internal tear. The torn ends of the sphincter were now seized with a rat-tooth forceps and three interrupted sutures of chromic catgut No. 2 brought the ends well together. The sponge was now removed from the vagina and the placenta came away. Inspection of it showed it to be intact with all the membranes. One silkworm-gut suture was now placed in the external perineum so as to include the torn sphincter as a supporting stitch. Three others were in turn then placed and the external perineum brought into approximation. These sutures were all tied without pressure on the tissue because of the edema which was already present. Vulva then cleaned up and sterile pads placed over it.

Patient made a good recovery from ether. No vomiting. The uterus was held for forty minutes and it stayed well contracted. Patient's pulse when she came out of ether was 120, occasionally rising to 130 or dropping to 110. It remained of good quality. There was no bleeding. The baby was in excellent condition and weighed eight pounds.

January 29. Telephone from the physician in charge saying the temperature was practically normal, pulse coming down in rate. Lochia normal. No tenderness over the uterus. Stitches looked well. No edema. Is passing urine and the milk is coming into the breasts.

February 2. Evening of the sixth day. Telephone from the attending physician saying "the patient is not doing as well" as he would like and wanted me to see her. Temperature he said to-night jumped to 103.4°, with rise in pulse to 120. The perineal stitches looked as if they had not "held."

I saw her the next morning. She was smiling but she looked sick. Her temperature was 101°, pulse 130, regular, of good volume and tension. Breasts were full but soft. The baby was nursing regularly every two hours. Abdomen was slightly distended. Tympanitic. There was no tenderness anywhere in the abdomen. The uterus was hard and contracted to one and a half inches above the symphysis and not

tender. There was no tenderness in either kidney region. From examination thus far I felt confident that the source of the trouble was not uterine. Patient then placed across the bed in lithotomy position.

Lochia is contaminated with feces and feces are seen over the lower part of the vulva. Vulva carefully cleaned and labia separated, and it is at once seen that the perineum has sloughed. Palpation with finger on the left of the perineum gave no tenderness but on the patient's right there was exquisite tenderness. External stitches except the one in the sphincter removed. Bivalve speculum introduced into the vagina and a dirty, foul sloughing mass at once appeared. With my finger I laid the tear open to the base, wiped it out with sterile gauze and then with 70% alcohol and packed the tear wide open with iodoform gauze. Feces were found coming through the perineum just above the sphincter. I did not see the cervix. I suggested that her shoulders and body be raised in order to favor drainage. No stimulation now advised. Bowels to be kept free. The diagnosis is clear. Sepsis from a perineal tear.

The next morning the temperature and pulse dropped. For a few days she did well but then began to run a slight temperature and a rising pulse. I did not see her again but the physician in charge reports that she had a long drawn out sickness, marked right-sided pyelitis, and a double phlebitis but that now in April, she is well, has control over her sphincter, and there is no leaking of feces through the vagina. She has no discharge and has no bearing down sensations in the vulva. Considers herself as well as ever and the baby has done consistently well on modified milk. There is no doubt that later this patient will have to have her perineum repaired.

Case 27. BREECH. VOORHEES BAG. The patient is twenty-four years old. She is at term in her second pregnancy. The first ended in a miscarriage at three months, cause of which is unknown. She entered the hospital at ten o'clock on the morning of November third. Labor, she said, began about two A.M.; the pains were not severe, but were sufficiently hard to prevent her from sleeping. Palpation showed the position to be S. D. A. The breech was firmly engaged at the inlet. Uterus was contracting and relaxing well. Fetal heart was 144 in the right upper quadrant. The baby is small. Membranes unruptured. Pelvic measurements are normal. Patient's pulse is 76. Temperature 98.6°. No vaginal examination made at this time. Observation over the next hour showed the pains coming every eight to ten minutes and apparently of increasing severity. By three P.M. the pains were of five-minute intervals lasting one minute. The uterus continued to relax well. Fetal heart stayed at 140–150, patient's pulse 80. From now to eight P.M. labor continued active and the patient began to cry out with each successive pain. At eight P.M. the house officer reported that vaginal examination showed the breech to be well engaged, the cervix taken up and the os dilated but one inch. Membranes unruptured. Fetal heart 146. Patient's pulse was 108. The uterus was soft between pains. The patient was crying out loudly with each pain and it was evident she was losing her self-control. I advised the house officer to put in at once a large-sized Voorhees bag under ether. He at once made the necessary preparations and by nine P.M. she was out of ether with the bag within the cervix. In passing the bag through the cervix the house officer ruptured the membranes but very little liquor came away. Pains did not cease, but continued coming in decreasing intervals. Pulse immediately on coming out of ether was 120 but it very soon dropped to 100. Fetal heart remained at 148. At ten-thirty the bag came out over the perineum. At eleven the breech appeared at the vulva. She worked well with each pain and steady progress was made. Fetal heart remained regular. She was now put across the bed and her legs held in lithotomy position by the nurses. With each

pain ether was given her. She steadily pushed the breech further into view. As the breech crowned she was under full anesthesia. There was no difficulty in the delivery of the buttocks and legs. The arms were found flexed on the chest and were readily delivered. With gentle traction combined with suprapubic pressure the head was readily born. The baby cried at once and when the cord stopped pulsating it was tied, cut and the baby put aside.

Inspection of the perineum showed a moderate second-degree tear. Three silkworm-gut sutures were at once placed so as to surround the base of the tear. Fifteen minutes after the baby's birth the placenta came away spontaneously, intact with all the membranes. The perineal stitches were then tied. The patient carefully cleaned up, sterile vulval pad placed and she was put back to bed in excellent condition. Pulse 112. The baby weighed 6 pounds and 6 ounces.

The patient made an excellent convalescence, nursed her baby and it did well. Stitches were removed on the eighth day. She got up out of bed the twelfth day. Examination the thirteenth day showed the perineum well healed. Uterus normal in size and position, freely movable. Slight bilateral tear of the cervix. Vaults free. No flowing. She was discharged on the fourteenth day, both she and the baby well.

Summary of Breech Delivery and Extraction.

The successful management of a breech labor may at any moment tax the ability and judgment of the physician in charge. The laity have come to regard the loss of a baby when the birth is by the breech as a usual occurrence. Physicians have enlarged upon this so that now one may constantly hear that this presentation alone is the cause of the death. I do not care who is in charge of a breech labor, that physician may occasionally lose babies from this presentation, but by far the large majority of babies are lost because of bad management from start to finish. Bad management is not blamed, but the physician is ever ready to

hide behind the idea that the laity expect babies to be lost from this presentation.

In the management of a breech presentation the question arises at the outset as to when a physician should go to such a case after labor has begun. The author feels strongly that in such cases the physician should go at once. The physician's place is with the patient because of the well-known facts of the added risks such a presentation carries. At any time in the labor *active interference* may be necessary if a live baby is to be obtained. No physician can tell when that will come. Watchful preparedness must be kept. If the physician cannot go he is bound, in my opinion, to send someone else as competent as he to stay with the patient until he can get there. The busy practitioner will say at once that he cannot afford to spend so much time on an obstetrical case. The answer to this is plain, that if there is a bad result, the blame must be entirely his and not that of the presentation.

The question of assistance is one of great importance. A breech delivery should never be attempted without skilled assistance. The author has never yet been in the predicament of having to deliver a breech alone. Careful antenatal examination will give the diagnosis of the presentation. Help from a nearby physician can always, except in remote country districts, be arranged for if the physician wishes it. One may say that the family cannot afford to pay a second physician for his time. If this is the case, give the assistant part, or even the whole, of your fee and have the case go well. If you put it only on a selfish basis in the long run such an attitude pays. If you are away in the country either take a younger physician with you, or have him in close telephone connection so that you can get help quickly. Certain physicians will say that having a second physician is absurd, an unwarrantable expense, an unnecessary added fear to the patient. These reasons weigh little with a successful result in the balance.

Careful watching of the fetal heart and the recording of it is important. A rise of a few beats usually is not of importance, but a steady slight rise is indicative of probable danger.

When the membranes are unruptured, auscultation of the fetal heart once an hour if there is no change is usually sufficient; if there is any alteration, then oftener, as the occasion may indicate. If the patient is in active labor and membranes are ruptured then listen to the fetal heart at least every half hour. The moment the membranes rupture, the fetal heart should be listened to. It must be remembered that the loss of the fetal heart is not necessarily an indication of the death of the fetus. On the other hand, the steady rise, or irregularity in the beats calls frequently for active interference. The well-known danger, but often not appreciated, of pressure on the cord in footling presentations must be kept in mind and will many times mean very frequent observations of the fetal heart even to the annoyance of the patient.

The careful use of obstetrical ether in a breech is just as permissible as in a vertex presentation. There is absolutely no reason why it should be withheld.

The question is sometimes raised, "why not perform an external version before labor starts up?" The consensus of opinion is that many times it is impossible; that when it is possible the conditions which made the presentation a breech still being present will return the fetus to its first position. In a multigravida known to have sufficient pelvic room there is no indication for even thinking of an external version for if breech presentations in such patients are well managed there should be no mortality or morbidity. If an external version is attempted, there unquestionably is a risk of entangling the fetus in its umbilical cord and the loss of the baby from this procedure would be a great blow.

A certain few breech presentations undoubtedly do turn spontaneously and become vertex presentations, or the version may be vice versa as above noted, page 175. The author questions the statement that vertex presentations become breech presentations after labor is well established. The probability of an error in diagnosis is too great. The rupture of the membranes at the onset of a breech labor may increase the risk to the baby many times, because of the necessity of operative interference. The breech is not a good dilator. Such labors may be slow and without advance. But as above

recorded (Case 24) progress may be satisfactory even in a primipara.

The author does not allow patients with breech presentations with a constant oozing away of the liquor, up and about the room, much preferring to keep in utero what liquor is left as a protection to the baby rather than to hurry labor by walking the patient about. When the membranes rupture early and satisfactory progress is not made the introduction of a dilating bag works beautifully in many cases and oftentimes makes the delivery as noted in Case 27 very easy. Had the attending physician in Case 25 introduced the dilating bag when labor was advancing irregularly and poorly, undoubtedly dilatation would have been complete hours earlier and in all probability the contraction ring which prevented him from delivering the baby would not have been present, at least it would not have been so tight that with justifiable force he could not have dilated it.

The author recognizes that this suggestion of introducing a dilating bag is far removed from the usual teaching of leaving breech presentations severely alone, on the ground that in time they will deliver themselves without disaster. The author appreciates the fact that the average breech labor in a primipara or multipara is usually slower than when the vertex presents. When progress as shown by the dilatation of the os uteri or descent of the breech is steady and the type of labor is normal (see page 175) then only watch the patient, but be prepared. On the other hand, when progress is not made, find out why it is not and plan the conduct of the case accordingly. If you wait until one or the other of the patients is in poor condition you will be forced to operate in the end and the result can in all probability be but poor. In other words, interfere only when you are certain that progress is not being made. The more skillful the physician the sooner is he justified in operating. Every physician who undertakes an obstetrical case must be able to recognize progress or non-progress. If he is not sufficiently well trained to attempt the procedure indicated he must be willing to send for help early so that the consultant will have at least an even chance to do his work well.

The same instruments should be ready for a breech delivery as for a forceps delivery (page 160), with the addition possibly of a blunt hook. Few physicians carry with them a blunt hook, possibly because of the danger its use entails. The blunt hook which supply houses usually carry is of a poor type. The diameter of the curve is much too small, making, in all but very small babies, pressure in the groin over the femoral vessels. If one is to be used the curve should have a diameter of two inches so that the leg is surrounded. Opposite to the hook at right angles to it should be a handle and not the old-fashioned crotchet. If, as is often the case, the physician does not see that means to resuscitate the baby (page 478) are at hand, he should never fail to have them ready in a breech delivery, no matter how simple he thinks it is to be.

Besides the above-mentioned aids a pail of sterile hot water or hot corrosive solution 1–3000 and three or four sterile towels must be ready. The towels are used either wet or dry as the physician elects. Their use is two fold, first to give the operator means to grasp firmly the leg or body in order to prevent slipping and second if used wet and warm to help prevent the baby taking the first inspiratory gasp while the head is in utero.

The relationship of the size of the baby in breech presentation to a given pelvis is much more difficult to determine than in a vertex presentation because of the far removal of the head from the pelvis. This fact is no reason, however, for not making as careful measurements of the pelvis as is possible. If the relation between the fetus and the pelvis is close then may arise the question of a Cæsarean section; if disproportion is present Cæsarean section becomes without a doubt the elective means of delivery.

All patients with breech presentations should be delivered in the dorsal position. The legs, if possible, should be held, not necessarily by trained assistants. If this cannot conveniently be done, a leg holder, or even the backs of two straight chairs may be used.

The author firmly believes that all breech cases at the final expulsive stage should be under complete anesthesia. I

admit that occasionally it may be unnecessary, but I have too often seen physicians try to deliver the arms and the after-coming head in cases without ether and then hurriedly and cruelly clap on the ether cone expecting to obtain in a few seconds complete relaxation. No one knows when an arm will be extended and never can the best intelligent supra-pubic pressure be given with the patient straining at the utmost with her abdominal muscles.

In a breech labor the preparations for the delivery, which are the same as for any delivery, should have been completed much earlier than in a vertex presentation because as I have already said the possibility of interference may be necessary at any moment.

The patient during the first stage may elect the position she will be in, up and about her room or lying down. As the pains increase and she goes to her bed, whether she takes the dorsal position or not is immaterial unless she is a multipara with a pendulous abdomen; then she should be kept on her back. It may even be necessary to draw up by a binder a markedly pendulous abdomen and splint it on either side. Failure to keep in mind this simple procedure has led to many hard operative deliveries. Within a short time I saw this procedure strikingly shown. The patient, a multipara, had been in the second stage of a breech labor about two and a half hours. When I saw her the breech was at the inlet. She was in excellent labor but during all of this stage had been kept on her left side. The abdomen was very pendulous and it was apparent that the excellent pains were accomplishing little, if anything. The uterus was working at a great disadvantage. I suggested placing her in the dorsal position which was done. In four pains the breech was in the pelvis and in a few more the buttocks appeared at the vulva and the delivery was accomplished in a few minutes.

When the perineum is bulging, then at the latest should the patient be put in the dorsal position. If obstetrical ether has not before this been begun it now may be. As the buttocks come further into view with each succeeding pain they are supported or raised slightly upward, — lateral flexion. Ether is forced more and more. The legs are delivered at

all times remembering the anatomy of the joint one is manipulating. The legs and buttocks delivered then one feels for the cord and determines whether it is pulsating or not. To place the cord at this point or that, the author believes to be unnecessary. Draw it down, so that as the delivery is completed, there will be no undue tension upon it.

The rapidity with which delivery must be accomplished depends upon the pulsations or non-pulsations in the cord. The bisacromial diameter of the shoulders is kept in one or the other of the oblique diameters of the pelvis, depending upon which position the baby lies. The perineal arm is first delivered and then the anterior (for technique see page 177).

During the time of the delivery from the beginning of the expulsion of the buttocks to the completion of the delivery of the arms there should be good pressure on the fundus of the uterus. If the operator finds that the arms are extended the pressure on the fundus must be very slight. Otherwise, the head and the arms will have a tendency to become wedged in the pelvic inlet. If the bisacromial diameter of the shoulders is coming down in the right oblique diameter, the author always places the body of the baby astraddle his right forearm with the index and middle fingers in the child's canine fossæ or in the mouth. The left hand grasps the child's neck, the middle finger on one side and the ring finger on the other. With this grasp, downward and then upward traction is carried out, combined with intelligent suprapubic pressure. By intelligent suprapubic pressure, I mean well-directed evenly given pressure directly on the vertex. This is best obtained as follows:—The patient is across the bed in lithotomy position, as I have already said, either with the legs held or in stirrups. The assistant who is standing by the bed or kneeling on it facing the operator and who has been giving fundal pressure, keeps careful watch on each movement of the operator. When he sees that the extraction of the head is to be begun, with both hands he surrounds the head, getting in beneath the placenta, letting the fundus for the moment go, pressing directly on the head. His extended fingers are in the hollow of the sacrum towards the sincipital end of the head. His thumbs are forward over the

occiput and the moment the operator starts his traction downward the assistant makes firm pressure with his hands downward, more forward with his fingers than with his thumbs, thereby keeping the flexion which at first is so essential. With pressure from above and traction from below the occiput swings around the arch of the symphysis and the head is born. The amount of suprapubic pressure necessary varies greatly, in some cases practically none is necessary. In others the amount necessary is great, and unless it is given intelligently the result is oftentimes fatal to the baby. With the pressure given as described, the descent of the head is most readily appreciated and the amount of force used readily graded. There is no danger in leaving the fundus alone for the few moments that the extraction of the head requires in the majority of cases. Should the extraction of the head prove very difficult and require much time, one hand must be taken off the head and put on the fundus to hold it down. The usual advice pictured in the textbooks shows the pressure transmitted through the placenta to the head, but in the author's hands this method has not been as satisfactory or as efficient as the one here described.

In a breech delivery the forceps must be ready to be applied to the after-coming head (see page 245). The most skillful obstetricians will at times have to resort to their use and it is the author's feeling that less damage is done to the baby by their application than by persisting in using an unjustifiable amount of traction on the baby's neck. The author's rule is, if after three attempts of combined traction and suprapubic pressure no advance is made he then without hesitancy, puts forceps to the after-coming head. It is a life-saving procedure and its technic must be mastered.

Forceps to the breech has been advocated but they are not moulded for the breech. They have a tendency to slip and on the whole are very unsatisfactory.

Do not interfere with a breech that is progressing satisfactorily. Follow carefully its progress. If with a good type of labor there is no progress and indications arise for interference be prepared to meet any emergency. If you are not sufficiently well trained to do the necessary procedure,

turn to the best man in your neighborhood to help you. Do not stand idle when you know the indication for delivery is clear. If the membranes in a breech presentation rupture early and no progress is made, the early use of a dilating bag is of great aid and will many times make what looks to be a difficult problem turn out relatively simple.

All agree that the risk to the baby in any breech delivery is greater than in a vertex presentation and because this is so it is most important that every possible safeguard be taken to obtain a live baby. Even with all possible care a certain small number of breech presentations must necessarily be lost, but if physicians would be more disposed to criticise themselves for the loss of these babies and not blame the position of the fetus for the bad result, there would directly follow a decrease in the mortality rate.

There is no gainsaying the fact that the morbidity of the child in breech presentations is distinctly greater than in vertex presentations. Fractured arms or legs, obstetrical paralysis and intracranial hemorrhage are not uncommon. In giving the prognosis for the baby to the family in a breech extraction it is always best to give a guarded one for the physician can never tell what difficulties he may encounter before the child is born. This is especially true in a primiparous breech but in a multiparous breech where there is no disproportion the prognosis, as has already been said, should be absolutely good.

The prognosis for the mother in a properly managed breech labor should be absolutely good; it is the risk of any obstetrical case.

SECTION VI.

MULTIPLE PREGNANCY.

Case 28. TWINS. O. D. A. LOW FORCEPS. S. L. A. BREECH EXTRACTION. Patient is seen for the first time September 3rd. Up to this time she has been in charge of the family physician. She is 26 years of age and has been married eighteen months. She began menstruating when she was 12 years old. Menstruation comes every 28 days, with an occasional interval of five weeks. She flows five days. Her last normal menstruation was on February 6th. She expected to flow early in March but no period came. On March 14th she flowed profusely with clots and on the 15th she passed one large clot with much "substance" to it. At this time she had a great amount of pain and was in bed for two days. On March 16th the flow stopped and she was up again on the 17th. She thought, at this time, she had had a miscarriage. No physician saw her. She has had no flowing since these two days, March 14th and 15th. She herself does not think pregnancy started until after the 26th of March. If that is so she would not be due for delivery until the end of December while if pregnancy began before the period skipped in March she would be due in all probability the first part of November. She has been perfectly well up to the present time. All urinary examinations have been reported as normal. Her bowels are moving daily with the aid of cascara.

Because of this irregular menstruation she decided not to engage a nurse until she fell into labor. She was given the list of necessary articles for the delivery and told to have them in the house by the first of November.

October 5. Her pelvis was measured to-day: — Crests 27.5 cm.; spines 24.5 cm.; external conjugate 19 cm. She is a small, slight woman with small bones. If she goes until the end of December she will have a very large baby. From palpation I cannot determine the position, the

abdomen is so tense. There is a vertex without any doubt presenting at the brim of the pelvis. No fetal heart heard and no fetal movements felt.

October 25. For the past few days she has been having slight uterine contractions with pain. They are irregular in time and severity. They come especially at night, and she has been able for the last two nights to get but little sleep. She gets up five or six times to urinate and passes but a small amount each time. Her pulse is 80 and she is in excellent condition. Slight edema is present at the ankles; none of the face or of the hands. Palpation to-day shows a large abdomen. Fundus is at the ensiform. A hard, firm, round mass is to-day readily made out in the left upper quadrant. Ballotment with this mass is definitely obtained. There is smooth resistance both on the right and on the left sides of the abdomen. Small parts are palpated in the median line. A head is made out entering the pelvis. Fetal heart is heard best at the level of the umbilicus one inch to the left, 140 to the minute.

VAGINAL EXAMINATION: — Promontory cannot be reached because of the head, which is well in the pelvis. Contour of the true pelvis is apparently normal. Ischial spines are readily palpated. Cervix is soft and flush with the vaginal vault. Os admits one finger. Pubic angle is normal.

A diagnosis of twins definitely made. For her sleeplessness she was given trional gr. x at bedtime.

November 9. At six this morning she was awakened by pains in the abdomen. The pains came for two hours every twenty minutes and then stopped. At noon she again began to have pains at fifteen-minute intervals, and at one P.M. she telephoned to me. I saw her shortly after this and she was then having definite uterine contractions every eight minutes, lasting but thirty seconds. A nurse was at once obtained and the preparations for delivery begun. From four until seven she had practically no pains, though the nurse noticed a few irregular contractions of the uterus. At seven P.M. she started in having hard pains every ten minutes, lasting one minute. The uterus contracted well but relaxed poorly. By midnight the pains were coming every three minutes and lasting a minute. Patient's pulse 90. There was consider-

able show. The membranes were unruptured and the fetal heart remained 140 to the minute. At no time could I find a second fetal heart.

November 10. 3 A.M. Vaginal examination showed the cervix very thin; os uteri three-quarters dilated. A good bag of forewaters present and a small head low in the pelvis. From now to four A.M. the pains came in decreasing frequency and lasted but thirty seconds. The uterus remained tense between pains. It was not tender. The pulse had risen to 110. I then decided to deliver her because of the inefficient type of labor and the rising pulse.

Preparations were completed. Patient etherized, and placed in lithotomy position. Scrubbed up. Catheterized. Perineum thoroughly dilated. Os found to be fully dilated. Membranes now ruptured and position determined to be O. D. A. Forceps were readily applied to the small head. With the first traction the head at once came in sight. A very easy extraction then followed. The baby was a small puny thing without strength. It cried feebly at once. The cord was clamped twice and cut between. The baby was given to the nurse and she carefully did it up in a warm blanket and put a hot-water bag near it. As soon as this baby was delivered it was at once seen that another baby was in utero and the diagnosis of twins confirmed.

Vaginal examination showed a breech presenting in S. L. A. position. Left hand passed into the uterus and the membranes of the second sack then ruptured. The anterior foot was found and a breech extraction (see page 189) readily done. The arms were not extended and were delivered with ease. There was no difficulty with the after-coming head because of the excellent suprapubic pressure which was given. When the cord stopped pulsating it was clamped and cut. Examination of the perineum showed a slight first-degree median tear.

The uterus acted well and on the fifth contraction expelled the placenta. Examination of the placenta showed it to be intact with all the membranes. As well as could be determined it was one placenta. The babies were both girls.

The patient's pulse after delivery was 120. There was no

bleeding and the uterus remained hard and well contracted. Ergot was given intramuscularly. The perineum was repaired at once with two silkworm-gut sutures. She was cleaned up, a sterile pad put on and at once put back to bed in excellent condition. She made an excellent recovery from ether without vomiting.

The first baby was at once oiled, wrapped in absorbent cotton and surrounded by hot-water bottles. Its care was at once assumed by the family physician who is a children's specialist. The second baby weighed seven pounds and was in excellent condition. It was washed and dressed at the nurse's convenience.

At the evening visit patient had a temperature of 99°; pulse 70. She has voided urine. She and the babies are in excellent condition.

November 12. Early this morning the nurse went to change the little baby and found it cold and pale. She opened the premature jacket and found the diaper soaked through with bright red blood and also a large tarry movement. She at once telephoned to the physician-in-charge but the baby died within five minutes. It undoubtedly had hemorrhagic disease of the new-born, and the one large hemorrhage was fatal.

The mother is doing well. Temperature 99.2° and pulse 104 to-night. As yet there is very little milk in the breasts. The baby is nursing every four hours and is satisfied.

November 18. The stitches were removed to-day, apparently a good result. Baby is nursing regularly every two hours and is gaining. There is no vaginal discharge, and the uterus cannot be felt above the symphysis.

November 30. The patient has made a uniformly good convalescence. She got up to-day, the twenty-first day. From now on she is to get about more and more.

December 10. VAGINAL EXAMINATION: — Perineum well healed. Cervix shows a stellate tear. Uterus is normal in size and position. Is freely movable. There is no tenderness in the pelvis. There is a slight leucorrhea present. Both she and the baby are in excellent condition and are discharged to the family physician.

Case 29. TWINS. O. L. A. O. D. P. NORMAL DELIVERIES. Patient is eight months advanced in her fourth pregnancy. Three previous pregnancies have all been normal and she delivered herself very readily after short labors. The children weighed at birth between 7½ and 8½ pounds. At the first delivery she was badly lacerated and she said that five external stitches were placed. In the present pregnancy there is nothing of interest to note. She is due for delivery according to her menstrual periods December 29th. December 26th at 2:30 A.M. the husband of the patient telephoned that his wife was having a few pains and that the waters had broken at eleven o'clock December 25th, and that now a slight amount of blood was coming away. I saw her at 3:30. At that time she was having no pains and had had none for the past half hour. Palpation shows a large abdomen. Definite diagnosis of position is difficult to determine. Unquestionably there is a head presenting and there is firm resistance along the left side of the abdomen. There is also firm, smooth resistance on the right side of the abdomen and it is a question whether there is not a head low down on the right side. Fetal heart is heard distinctly in the left lower quadrant, 120 to the minute. No other fetal heart can be heard in any part of the abdomen. Fetal motion is seen in the median line and here definite motion can be felt. There is a probability of twins but as she is a difficult patient to palpate and as a second fetal heart is not heard, a definite diagnosis is not made. The head is not firmly engaged in the pelvis and because the membranes had ruptured I made a vaginal examination at once and found a good-sized head presenting, only lightly engaged. Os uteri was dilated to the size of a fifty-cent piece but the cervix was thick. No cord was felt. From four o'clock until six she had no pains or contractions of the uterus. Shortly after six she began having pains every ten minutes lasting one-half to three-quarters of a minute. From now on she had increasingly severe pains. At eight o'clock she began to bear down with each pain and from the character of her pains it was quite evident that she must be beginning her second stage. Preparations for delivery were quickly completed as previously

described. I had nobody to help me but the husband as this was one of my earliest cases. About half past eight the perineum began to bulge and she was at once put into the left lateral position and urged to bear down with each pain. She very quickly brought the head to the vulva; as the perineum had been badly lacerated there was a very short perineal stage. No ether was given. She was made to pant and gradually the head was delivered. It restituted to her left and the labor was therefore from an O. L. A. The baby was large, a boy, and cried at once. The cord was pulsating. Because of the suspicion of twins care was taken to put two clamps on the cord as it stopped beating, and the cord was cut between them. I immediately grasped the fundus as soon as the child was born and it was very evident that there was another baby in utero. The first baby was put aside, carefully wrapped up in a blanket with a hot-water bottle beside it. Palpation of the uterus showed the second baby presenting by the vertex. Pains did not begin again for one-half hour after the delivery of the first baby, but they then began again with excellent contractions and in three-quarters of an hour she again began to bear down. The membranes of the second sac had not ruptured. I examined the patient and found that the head was in the pelvis and I then ruptured the membranes. Pains then ceased for twenty minutes when she had one severe pain and the perineum began to bulge. She was made to pant and with the next pain she pushed the head so far down that it could be held from behind the anus. She continued panting and the head was then delivered between pains as described in the normal deliveries. The occiput restituted to her right. The shoulders and body of the baby followed at once. It was another boy. I at once grasped the fundus of the uterus with my left hand and it was found to be firmly contracted but large and I then put the patient's hands down on the fundus and told her to keep them there until I told her she could let go. The cord was pulsating and as soon as it stopped pulsating was clamped and the baby was put away. Patient was then turned as previously described onto her back. A fresh sterile pair of gloves put on and half an hour after the delivery

was completed the placenta came away intact with all the membranes. There was one placenta and two amniotic sacs and apparently it was intact with all the membranes. The uterus acted well but because of the distention of the uterus I gave her ergot intramuscularly. She was cleaned up and put back to bed in excellent condition. Pulse of 80. Temperature taken before I left was 99.2°. There was no bleeding and I left her two hours after the delivery was completed in excellent condition. The babies weighed 7½ and 7 pounds. Both were boys and physical examination showed them to be normal. There was milk in the breasts and late in the afternoon of the 26th both babies were put to the breast and nursed well. The milk came in on the second day. The patient made an absolutely normal convalescence. She had a great quantity of milk and was able to nurse both babies. Patient remained in bed ten days and then got up and went about her work. Vaginal examination at the end of three weeks showed previous perineal tears. Uterus slightly subinvoluted. Normal in position and not tender. Nothing felt on the sides. Breasts in excellent condition. Both babies have done well. Each umbilicus is healed and solid. Patients are discharged.

Case 30. TWINS. DOUBLE FOOTLING. EXTRACTION. Sc. L. A. VERSION. Patient is seen for the first time when she presents herself at the hospital in active labor. She says she is at full time. This is her eighth pregnancy. Previous pregnancies have all been normal and the deliveries very rapid and easy. She is in such active labor, pains coming every two minutes and lasting one minute, that satisfactory palpation is impossible. The abdomen is very large and distinctly irregular in outline and two hard firm round masses are felt above the umbilicus, one in the right upper quadrant and the other one in the left but lower than the first. Diagnosis of twins made and as the membranes had ruptured and the patient was in active labor she was examined at once by vagina. Both feet were found presenting and the os uteri was fully dilatable and very thin. Perineum was relaxed and showed previous severe tears. Preparations for delivery were quickly completed and she was told to pant with each pain until the instruments were made ready. When the preparations were complete the patient was put across the bed and scrubbed up carefully and the vulva surrounded by sterile towels. The legs were held by nurses. At each pain she was urged to bear down. Steady progress was made and both feet appeared at the vulva. Circulation good. With each succeeding pain the legs were forced further into view. They were simply supported, — held up off the perineum. It was evident that the baby's body was coming down in the left oblique diameter. As the thighs appeared the patient was given ether with each pain so that by the time the buttocks were at the vulva she was almost under complete though light anesthesia. Ether was forced and as the body came over the perineum she was completely relaxed. A very easy typical breech delivery was then done without the slightest difficulty. There were no fresh tears. The baby, a girl, was drained; she cried at once and the cord was clamped in two places and cut between.

It was now very clear that there was still a large baby within the uterus. Patient still etherized and vaginal examination showed a transverse presentation with the back anterior, occiput on the left, and the right shoulder, the lower

one. I now ruptured the membranes and seized a foot. I then told my assistant which way the head would go, namely upward on the mother's left. Traction downward on the foot made progress but it was at once seen that the foot drawn down was the posterior. I then explored the vagina with my right hand to see if I could reach the anterior foot. It was found at the pelvic brim. This was now brought down and a breech extraction done. The bitrochanteric diameter came down in the right oblique diameter. The left arm was the perineal arm and it was readily swept down from its extended position, over the face and chest and delivered. The right arm was now sought and it was found to be behind the occiput in the so-called nuchal position. The baby's body with the operator's right hand on its right shoulder was then rotated to the operator's right making this right shoulder the perineal. The pelvis was so large and the introitus so relaxed that the fingers of the right hand were passed up over the baby's shoulder without difficulty to the arm and by pressure downwards the arm was flexed, the elbow reached and the forearm swept downward over the face and out. With very slight suprapubic pressure the head was then readily delivered. The baby cried at once; it was another girl. The placenta at once appeared at the vulva. The cord was clamped and cut and the baby put aside. As the placenta was in the vagina, it was then delivered and there followed at once much bleeding. The patient was at once given a hot, 110°, intra-uterine douche of corrosive sublimate 1–10,000 and aseptic ergot intramuscularly. The uterus very quickly contracted and the bleeding ceased. Examination of the perineum showed no fresh tears. The patient was cleaned up, a sterile pad put on and she was put back into bed with a pulse of 100, in excellent condition.

The uterus was large and relaxed frequently and there was continual oozing from the vagina. The uterus was carefully held and with ice to the fundus and a second dose of ergot it gradually began to act better. The pulse steadily dropped and one hour after delivery was 74. The uterus was well contracted and there was only a normal amount of bleeding. Her binder was then put on. The babies were weighed and

the first weighed seven pounds and fifteen ounces and the second eight pounds and one ounce. The entire length of labor was three hours and a half, as nearly as could be determined. There was milk in the breasts and after she had had a rest the babies were put to the breast. She made a perfect convalescence, nursed both the babies and they gained steadily after the initial loss. She and the babies went out of the hospital on the fourteenth day in excellent condition.

Summary of the Management of Multiple Pregnancy.

The diagnosis of twins may be very easy as it was in Case 28. Here a head could be palpated entering the pelvis and another was at the fundus of the uterus. The very large size of the abdomen was suggestive of twins in Case 30. If two fetal hearts can be heard at different rates at the same time the diagnosis may be definitely made, but because only one is heard, twins cannot be ruled out. There always is the possibility of twins being present and for that reason the cord should be clamped in all cases until it is certain that there is not a second baby present.

The prognosis in twin pregnancies properly managed should be absolutely good, — the risk of any obstetric case. Greater care must be exercised during the third stage and immediately after it. Because of the over distention that the uterus has been subjected to there is an increased risk of post-partum hemorrhage. Had Case 28 been allowed to drag on in desultory labor indefinitely, the danger of a post-partum hemorrhage would have been greatly increased. She would have been in far greater danger than she was from an operative delivery when she was in good condition. In multiple pregnancies the labor may be slow; on the other hand it may be very rapid as it was in Case 30. The uterus often does not act well because the distention is so great that it cannot contract. If the patient is etherized for the delivery of the first child as two of the above cases were, it is better judgment to deliver the second baby at once and not allow the patient to come out of ether and wait for labor to start up to expel the second child.

If the patient delivers herself there usually is an appreciable time between the birth of the two children while the uterus rests. This is well shown by Case 29. Do not hurry the delivery of the second twin. Let the uterus rest; it will begin to contract again very shortly. If by palpation or vaginal examination you find a vertex presentation do nothing for at least half an hour; then, if there are no pains, rupture the membranes and await developments. I have never seen a case of twins where the pains ceased entirely and no attempt was made to expel the second child. Should it happen and operative interference be demanded, the danger of post-partum hemorrhage is much increased and the uterus must be carefully guarded.

If the second twin presents transversely or any part prolapses, operative interference is demanded unless by manipulation, external or internal, the presentation can be corrected. If the breech presents, unless the baby is very small, etherize the patient as the buttocks appear. (See management of breech.) The preparations for a multiple delivery are the same as for a normal delivery. The means to meet any possible post-partum hemorrhage must be close at hand. The use of ergot intramuscularly is advisable in these cases, because of the unusual amount of distention to which the uterus is subjected.

The physician must remain with the patient until the uterus acts satisfactorily. In Case 30 the spontaneous delivery of the placenta was followed by sharp bleeding which was quickly controlled by an intra-uterine douche. The tendency of the uterus in these cases of multiple pregnancy after delivery is to relax and to allow oozing to take place. In these cases hold the uterus yourself and never delegate this important part of the confinement to anyone else. As already spoken of in normal deliveries, watch the maternal pulse from the moment the first child is delivered. Unless you know what the pulse is at the end of the delivery you at once are at sea as to the patient's condition.

The interlocking of twins is fortunately a rare occurrence, but one must always have the possibility of such a complication in mind. If there is delay or an undue amount of force

necessary to bring the first baby down, be sure that interlocking is not present before you exert force. Traction downwards on the first twin may be the wrong procedure. Each case has its own problems and a quick grasp of the situation will be necessary to carry out successfully any manœuvre.

SECTION VII.

PROLAPSED CORD.

Case 31. PROLAPSED CORD. VERSION. The patient is first seen in consultation on September 25th at six P.M. The physician-in-charge gives the following history: — The patient is at term in her first pregnancy. Membranes ruptured without warning, September 24th at eight P.M. September 25th about midnight pains began. Between five and six they became hard and came at twenty-minute intervals. Examination then by the physician-in-charge showed the head high, dilatation one finger. Cervix partially taken up. She went on throughout the day of the twenty-fifth having pains every five to eight minutes and lasting one to one and a half minutes. At 5 P.M. he said the os uteri was two inches dilated. Uterus was relaxing between pains poorly and was slightly tender in the lower uterine segment. Pulse was rising and in the past two hours had gone up twenty beats and was now 100. At six P.M. I found the uterus very tender. No contraction ring was palpable. Fetal heart left lower quadrant, 120 to the minute. Position not determined but a vertex presentation. Vaginal examination showed tight perineum. Biparietal not yet through the brim. Cervix very thin. Os dilated two and a half inches. Anterior fontanelle felt on the left, making the position a probable O. D. P. slightly extended. Pulse 120 and of good quality. I advised delivery because of the very slow progress, the increasing tenderness of the uterus, and because of the rising pulse.

Patient was etherized and prepared in the usual manner. Catheterized. Dilatation of the perineum and of the cervix completed. In making the diagnosis of the position I found a loop of pulsating cord down beside the head. This I attempted to replace and on the second attempt another loop came down beside the head. Further examination showed there were two loops of cord around the neck. Cord

was pulsating regularly and strongly. Forceps were contra-indicated, and I therefore at once decided upon a version. With fundal resistance, the right hand was pushed upward into the uterus and a foot, which proved to be the anterior one, was readily obtained. Version readily done as far as the spines of the scapulæ, the bitrochanteric diameter coming down in the left oblique diameter of the mother's pelvis. The right arm, which was the perineal one, was extended, but was readily brought down as described in breech delivery. The left arm was also extended; this I was unable to turn to make it the perineal arm and with much difficulty brought it down from the anterior position by going up with the left hand over the left shoulder. The child's body was lowered and drawn to the mother's left in order to gain room. The extended arm was then flexed by pressure on humerus with the operator's left hand and the forearm swept down over the face. The head was delivered readily with the aid of suprapubic pressure. Baby gasped at once. The cord was not pulsating and was clamped and cut. The baby was put into a pail of hot water and it soon began to cry lustily. Examination showed that the left clavicle was fractured and the baby moved its right arm poorly. The baby was carefully put aside after being drained and surrounded by heaters. I then scrubbed up again and with a clean pair of gloves examined the perineum which showed a severe tear in the right sulcus with a slight one on the left. Tear of the perineum into the sphincter but not through it. Right sulcus was repaired with interrupted chromic catgut sutures as was also the left tear. Two stitches of chromic catgut were placed in the torn fibres of the sphincter and brought the sphincter well together. One silkworm-gut suture was put through the torn ends of the sphincter as a supporting stitch. Three silkworm-gut sutures were placed externally, but were not tied. Patient now had a pulse between 120 and 130, but there was no bleeding and the uterus was contracting well. Placenta was delivered intact with all the membranes twenty minutes later. There was no bleeding and the uterus acted well. The silkworm-gut sutures were now tied loosely as there was much edema already present. A small fibroid the size of a walnut

was felt on the right posterior surface of the uterus. Patient made a good recovery from ether but ran a pulse of 140 for a short time. When I left two hours after delivery the patient was in good condition with pulse of 120, out of ether, uterus firmly contracted and there was no bleeding.

September 30. The patient has made a fair convalescence. Her bowels have not moved since the delivery until to-day, when she had a slight involuntary movement. The stitches are reported as looking clean. There is but very slight tenderness in the perineum.

October 5. Stitches were removed to-day by the patient's physician and a very poor result obtained. There was apparently little or no attempt at healing as far as the external laceration was concerned. The sphincter, however, is competent both for gas and feces.

Six months later the husband comes into the office and says that the baby has done uniformly well, moves both arms equally well and that his wife is having no discomfort from the tears, and is in excellent condition.

Case 32. PROLAPSED CORD. VERSION. Patient was seen for the first time by me August 22 at 11 A.M. in answer to a telephone message from an out-patient house officer that an externe had just reported a case of prolapsed cord in a multipara. When I got to the house I found that a second externe had been called after the first had left some two hours before, as the first externe did not think the patient was in labor. She was at the time the first externe saw her having no pains. Shortly after the externe left the patient got out of bed and the membranes ruptured. She felt the cord just outside the vagina and at once sent to the hospital for help. When the second externe arrived the patient was in bed and he saw the pulsating cord at the introitus. He put the patient at once into the knee-chest position and made ready for an operative delivery. The pains began as soon as the membranes ruptured. Before I arrived, the house officer had examined the patient and found her to be nearly two-thirds dilated with a soft cervix. I did not attempt to put back the cord but advised that she be etherized and delivered. She accepted the advice and as soon as the instruments were boiled and all the preparations were ready, she was let down from the knee-chest position, turned on her back and immediately etherized. Vaginal examination then showed a loop of pulsating cord in the vagina. This loop was pulled down and wiped off with 70% alcohol. Os uteri was fully dilated. The position was O. L. A. The perineum was carefully and fully dilated. An externe was then asked to give resistance on the fundus as the left hand was pushed up through the dilated cervix into the uterus and the cord was carried up by the hand. There was no contraction ring present. The hand was carried along the anterior portion of the body and the anterior leg was readily found and its foot seized. The externe was then told that the version would be done from the left to the right, that is, the occiput being on the left side, would go up on the patient's left and the foot would come down on the patient's right. Accordingly, as traction was made on the leg downwards the externe put his hand below the occiput and drew the occiput upwards towards the fundus. At first there was no progress made in turning, but with gradual traction com-

bined with drawing up by the externe, the foot came down. The bitrochanteric diameter of the baby came down in the right oblique diameter of the pelvis. Gradually the posterior buttock distended the perineum and the left index finger was then passed into the baby's left groin and traction downward made. Traction in the groin combined with traction on the leg and the buttocks were slowly delivered. The posterior leg was in complete extension and, remembering the anatomy of the joints, it was slowly delivered. The pelvic girdle was then grasped as previously described, page 184, and with traction downward combined with lateral flexion the body was quickly delivered. The cord was palpated and was not pulsating. The extraction was completed until the spines of the scapulae were seen. The baby's legs were carried upward towards the patient's left and the left, the perineal, arm sought. It was found only partially extended and as the fingers of the left hand went up over the shoulder and came down into the elbow, with gentle traction it was readily delivered. The feet were then taken with the left hand, the body drawn over to the patient's right and dropped downwards. With the right hand the anterior arm was sought. It was found extended and the right hand was pushed up over the anterior shoulder. With the fingers then along the right humerus the arm was flexed downwards across the baby's chest and delivered. The baby was quickly placed across the right forearm and the left hand grasped the baby at the neck. Combined with traction downward and suprapubic pressure as already described in the breech cases the head was extracted. As soon as the mouth was out of the vulva the remainder of the delivery was done slowly in order not to obtain serious lacerations of the perineum. Before the head was delivered the baby gave a few gasps. When delivered the cord was felt and it was not pulsating. The baby's heart was beating regularly and almost at once it began to breathe. The cord was clamped and cut at once. The baby soon cried vigorously. It moved its arms and legs normally and there was no apparent trauma done. The baby was given to one of the friends to look after. The placenta came away normally on the sixth contraction

and was intact with all the membranes. A clean pair of gloves was then put on and the interior of the uterus explored. No rupture was found and no severe tear of the cervix. An intra-uterine douche of sterile water was given and it came back clear. Ergot was given intramuscularly. The patient was cleaned up and a sterile pad put over the vulva. One-half hour after the delivery was completed the patient's pulse was 72 and she was nearly out of ether. The baby weighed 9½ pounds. Six hours after the delivery the temperature was 98.2° and pulse 62. Normal amount of flowing and the fundus was firm. She made an excellent convalescence. The temperature on the night of the second day rose to 99.2° and the pulse was 68. She was discharged on the twelfth day. Temperature normal and pulse 74. She had been up and about her home for the past three days. The baby was in excellent condition, nursing well and apparently gaining.

Case 33. PROLAPSED CORD. LOW FORCEPS. LATERAL POSITION. December 23. Patient presents herself at the office to-day saying she is pregnant. She has skipped two periods. Her menstruation began at 13 years of age and it comes every twenty-five days. She never has any pain with her periods. She has never had any illness. She was married three months ago. The last normal menstruation was October 30th. Vaginal examination: — slight increase of secretion. No secretion in the urethra. Cervix is soft. Uterus is distinctly enlarged. Normal position and freely movable. Pregnancy is probable. Hygiene of pregnancy was gone over with her and she was asked to report at the office once a month. If she is pregnant she will be due for delivery about the 7th of August.

She was pregnant at the time this note was made. Her pregnancy was perfectly normal and at no time was the blood pressure over 120 mm. of Hg. Urinary examinations all were normal.

June 26. Pelvis measured to-day shows crests 28 cm., spines 25 cm., external conjugate 20.5 cm. Palpation shows at the present time a small baby. Head is well in the pelvis. Fetal heart is in the left lower quadrant. Definite fetal motion is felt on the right. Vaginal examination shows cervix flush with the vaginal vault. Os uteri not dilated. Biparietal diameter of the head is through the brim. Promontory cannot be reached. Contour of the pelvis normal. Ischial spines not felt. Coccyx normal. Outlet is normal.

Finding the head down so low in the pelvis with the cervix soft, and entirely taken up made me go over again very carefully her menstrual history and the possibility of her becoming pregnant earlier than at first thought. From careful calculation and intimate history she probably will not be delivered before the first week in August.

July 15. She was seen to-day by an assistant and was found in excellent condition. Urine examination normal. His findings corroborated my previous ones.

July 31. Telephone from her husband to-night saying that the waters had begun to come away. An assistant was at once sent to her as I was out of town. At 11 P.M. I saw her

and found she had had no pains but was dribbling away a small amount of liquor. Palpation showed a left posterior position. Anterior shoulder is well forward. Small baby. Fetal heart is in the right lower quadrant 132 to the minute. Patient's pulse 60. Temperature normal. A nurse was at once secured and the patient kept in bed. She was shaved but an enema was not given her. Orders given to the nurse:— to follow the fetal heart and report any alterations and report any pains. Temperature and pulse to be recorded three times a day.

August 1. No pains or contractions. Small amount of liquor still dribbling away. Fetal heart remains regular, and has not varied more than ten beats since the first observation.

August 2. Palpation this afternoon showed still plenty of waters in the uterus. Uterus not tender or tight about the baby. Fetal heart has been regular all day varying only from 132–136. At four P.M. nurse noticed a few contractions. Fetal heart remained good, 128–134 as recorded by the nurse. At 11 P.M. patient was awakened by a few slight pains. At ten minutes of twelve a sudden change in the character of the pains occurred and they began coming every two minutes and the patient had an inclination to bear down with each pain. The nurse at once telephoned for me and I went to the patient at once arriving at 12:45 A.M. August 3rd. She was in very active labor. Fetal heart was regular but was not counted because she was in such active labor. I decided to examine her at once. At one o'clock I found the head very low, and what for a moment I thought to be unruptured membranes presenting. The head was just within the introitus. Feeling what I thought were the membranes my finger at once hooked about a prolapsed pulsating cord at the vulva. A loop of cord six inches long at once came outside the vagina. My first inclination was to urge the patient to bear down as strongly as possible to see if she could push the head down so that I could expel it by pressure from behind the anus or by a finger in the rectum. At the first straining effort she made, the cord stopped pulsating. I then told her to stop bearing down and the nurse who had already put the instruments on to boil was told to bring them to the room

at once. As the cord stopped pulsating I thrust my right hand into the vagina and pushed the head up off the perineal floor to give the cord an opportunity to pulsate. The moment the cord began to pulsate I ceased pushing up the head but kept my hand in the vagina with a finger on the cord which now began to pulsate regularly. The patient had had no ether when I thrust my hand into the vagina but as soon as possible she was given it and made as comfortable as possible. While waiting for the instruments it was seen that the perineum was already torn. The cord remained pulsating. The patient was lying in the left lateral position. There was no time to turn her to the dorsal position. The instruments were now at hand. The nurse forced the ether as rapidly as possible and the husband was told to raise the right leg. As the patient was going under ether she was told to bear down as much as possible. The head at once came down again onto the perineum. The left blade, the lower, with the patient lying on the left side, was rapidly placed quickly followed by the upper blade. No attempt to push back the loop of cord was made. The cord was not pulsating when the forceps were put on. Masses of meconium appeared at the vulva. The head was at once pulled through the perineum and the body delivered. The baby was pallid and without tone. Cord was not pulsating. Cord was clamped at once and cut. The baby was drained and put in warm water. The heart was beating very slowly and as the baby was put into hot water for resuscitation it gave a gasp. From then on it steadily improved and soon began to cry lustily. After some minutes the baby became of good color and its muscular tone steadily improved. A great amount of mucus was present and several times the baby was drained. She was then carefully done up in a blanket with a sterile dressing over the cord, and a hot-water bottle put nearby.

The patient was now out of ether, in excellent condition. Uterus was contracting well and there was no bleeding. Inspection of the perineum showed an extensive tear. I now waited until the assistant, who had been sent for, came. While waiting for him to arrive preparations for repair of the perineum were completed. Before he arrived the placenta

came away intact without all the membranes. There was no bleeding and therefore there was no attempt made to remove them from the uterus. On the assistant's arrival the patient was etherized and the legs held in moderate lithotomy position. Examination of the perineum after thorough cleansing of the introitus with 70% alcohol and wiping away the meconium showed a second-degree tear to be present with a deep laceration on the patient's right. The internal tear was at once repaired with three chromic catgut sutures No. 2 placed so as to include the depth of the tear. These three sutures brought the internal tear into excellent approximation. The external tear was closed by three silkworm-gut sutures. The patient was put back to bed in excellent condition, pulse 80, uterus well contracted and no bleeding.

The baby still continued to be choked with mucus and needed constant watching and another nurse was sent for. The baby breathed well and a quick examination of the lungs showed them to be expanded. Orders as follows, were left for the baby: — To oil it quickly in a room warmed to 80° F. Not to wash it. To dress the cord, put on the band but not to dress or handle the baby. To wrap it in a soft blanket. To keep the room at 70° and the crib at 80°. Sterile water in dram doses as needed. A modified milk, 2.00% fat, 6.00% sugar, 1.00% proteid was at once ordered for the baby, four drams every four hours.

August 5. Is making an excellent convalescence. Temperature this afternoon 99.8°, pulse 70. Uterus involuting very fast. Lochia normal. Perineum shows no edema and there is no tenderness present. Milk is coming into the breasts and the baby is nursing well every two hours. The baby seems perfectly normal in all respects. It weighed to-day six pounds eight ounces.

August 7. Temperature 98.8°. Pulse 70. Baby is gaining two to four ounces a day. A strip of membrane was found on the pad to-day. Lochia normal.

August 8. About eleven this morning patient complained of pain in the left breast and at noontime had a severe chill lasting for twenty minutes and the temperature went to 104.5°, pulse 100. She is complaining of a severe headache

and pains all over her body. Examination of the breast shows a definite flush over the inner lower quadrant, radiating out from the nipple. The whole breast is exquisitely tender to the touch. No definite lump is determined. Right breast negative. Chest is negative. Abdomen is negative. Perineum is not tender and looks well. The baby was at once taken off this breast. Ice-bags were put on the breast. Aspirin gr. x was given for her headache. The baby was put on a modified milk, the same formula as above noted, one ounce at every other feeding.

August 9. Breast is very tender, full and hard. Temperature this morning 99°, pulse 90. Four bulbfuls of milk drawn off with the breast pump. Pulse to-night 94, temperature 100.8°. The pulse has not dropped as hoped.

August 10. At eight-thirty this morning the patient had another chill. Temperature at eight was recorded as 99.4°, pulse 80. The nurse says that the patient complains only of the left breast. I saw her within an hour. Temperature 103.8°, pulse 100. She does not look sick but complains of the aching shooting pains in the left breast now more marked in the upper outer quadrant than in the lower inner one. She has a slight headache and her legs ache. Examination of the breast shows it to be very full but not exquisitely tender at any point. Nothing definite made out in the upper outer quadrant. Abdomen is negative as is also the chest. The condition of the breast does not seem to be sufficient to cause the present temperature and rise in pulse. She was placed across the bed in moderate lithotomy position and the perineum inspected and palpated. There was no tenderness present. The external stitches have cut slightly and were now removed. Bivalve speculum inserted into the vagina. Cervix shows a slight bilateral tear to be present and from the os is coming a light brownish discharge. The vaults are smooth and normal in character. The tear on the right perineum is evident but is not tender to palpation. The left wall of the pelvis is normal. One of the catgut sutures was picked up with a forceps and about it a drop of brownish discharge was seen. Wiped away with gauze sponge and it was found to have a foul odor. Suture removed and the

tissues separated with the gloved finger. Surrounding this suture was a definite necrotic area and the tissues about this area separated more readily than tissue healing eight days normally should. Cavity wiped out with gauze soaked in 70% alcohol and then packed with dry sterile gauze.

Ice is to be continued to the breast. The patient does not look sick but she is not eating well and is sleeping poorly. Bowels are moving well. Temperature to-night 103°. Pulse 100.

August 11. Temperature 101°, pulse 95, this morning. Slept well last night. The whole breast is less full and very much less tender. There now is a definite lump felt in the inner lower quadrant the size of a hen's egg. The ice-bag has been kept on the breast continuously. Gauze packing removed from the perineum. The cavity is dirty looking but no point of tenderness is found. Cavity wiped out and then repacked with a 10% iodoform wick. Except for the breast condition and for the perineum the physical examination is absolutely negative. The perineal wound is draining but little. The breast is much improved. I can see no reason why the temperature should not drop. The patient's pulse has never been over 105 and for that reason I do not regard her as seriously sick.

Temperature to-night 103.4°, pulse 100. Though the temperature is up to-night higher than at any time except immediately after the first chill, her pulse has not correspondingly risen.

August 12. Temperature this morning 98.6°, pulse 70. An excellent night. During the night she began to complain that the ice-bags made her chilly and the nurse telephoned for permission to remove them. It was allowed. This morning there is practically no tenderness in the breast. The perineum is discharging profusely and the odor is very foul. Packing removed and the cavity is much cleaner. Repacked with iodoform gauze wick. The baby was put to the breast but refused the nipple absolutely. Breast pump drew off only half a bulbful of milk. Baby is now to be put to this breast every other feeding in order to stimulate the breast. Temperature to-night 98.8°, pulse 76.

August 13. An excellent night. Temperature this morning 96.7°, pulse 76. No tenderness in the breast. Profuse discharge from the perineum but without bad odor. Packing taken out. Cavity shows red granulations which readily bleed. Cavity repacked with dry sterile gauze. The baby is doing well on the right breast supplemented by the modified milk. There is no change in the feel of the left breast.

August 14. The six-inch Bier bell put on the left breast to-day for five-minute periods every four hours (page 396). The baby still refuses this left nipple. With the breast pump a small amount of milk was withdrawn.

The cavity in the perineum is much smaller. Repacked with small amount of dry gauze.

Temperature and pulse normal all day.

August 15. Breast to-day is much fuller and milk can be expressed from the nipple. Baby this afternoon nursed well from it and by weighing before and after nursing was found to have obtained one ounce. Bier bell is continued. Perineum dressed and the cavity is rapidly closing in.

August 17. The left breast is secreting more and more. The baby is satisfied on it except for the long night interval. Perineum is rapidly healing.

August 19. Wick in the perineum left out to-day, very slight amount of discharge. Patient is in excellent condition and the baby is to have no more modified milk. Bier bell is to be continued for a few days more.

August 22. Perineum is practically healed. Temperature remains normal. Pulse 70. Plenty of milk. Baby is satisfied now on the breast. Bier bells stopped. Is to get out of bed to-morrow and gradually walk about her room.

August 29. No discharge from the vagina. Has absolutely no discomfort from the perineum. Feeling well in every respect and walking about as she wishes on her bedroom floor.

September 6. Has slowly resumed her usual duties and seems perfectly well. Vaginal examination to-day shows no bulging of the anterior or posterior wall on straining. The perineal tear has granulated up well and is solidly healed. Uterus well involuted. Normal position. Freely movable. Not tender. Nothing felt on the sides. Feels like a slight

bilateral tear of the cervix. Inspection shows a slight bilateral tear of the cervix with slight erosion. The baby has done consistently well, is satisfied on the breast and is gaining steadily. Patient discharged.

Summary of Prolapsed Cord.

There are two fundamental causes for the occurrence of a prolapsed cord; first, the presenting part does not snugly fit the inlet of the pelvis, and second, there must be a sufficient amount of liquor present to sweep down the cord when the membranes rupture. The distinction between a prolapsed and a presenting cord is simply whether the membranes are ruptured or not. If they are, the cord is called prolapsed. The distinction is largely an academic one for the treatment of both conditions is practically the same. It is true the danger to the baby while the cord is a presenting one is less than when it is a prolapsed one but the danger in either case is real. Case 16 gave an irregular fetal heart some days before labor began, but the membranes did not rupture early and on vaginal examination no cord was felt. When I came to deliver her by forceps I found a cord beside the head, not truly prolapsed, yet being pressed upon intermittently as shown by the irregularity of the fetal heart. This type of prolapse of the cord has been called "occult." The danger to the baby in this form is not as great as when the cord is in front of the presenting part. In this occult type the danger is that when the membranes rupture the cord will still further come down and become a completely prolapsed one. Again, it is in these cases very easy to press upon the cord by the forceps if an operative delivery is undertaken. For this reason, as I have already said, the fetal heart must be listened to as soon as the forceps are locked in every forceps delivery.

In Case 31 the manipulations in determining the position of the fetus brought down a loop of cord which already was low. In attempting to replace this loop another one came down and then the cord was felt twice about the neck. This was probably the reason the head did not engage because complete flexion was thus interfered with.

Replacement of the cord here failed and as the patient was under ether and about to be delivered for other reasons the problem here resolved itself into how best to deliver her. The only contra-indication for version was the fact that the membranes had been ruptured some hours. The risk of pinching the cord by the forceps blades, had forceps been attempted, far outweighed the danger of doing a version and therefore a version was done. The author has had poor success in attempting to replace the cord with the aid of the catheter and stylet. (For detailed accounts of this method consult any of the obstetrical textbooks.)

Another way recommended of managing these cases when the cord prolapses is to pass the hand up into the vagina and uterus, carrying up the cord with the hand. The cord is tucked safely away and the head drawn down into the pelvis by forceps if necessary and the case then left to nature. To the author's mind there cannot be a worse way to manage such a case. Ether in the large majority of cases must be given to do this and if one can carry the hand up into the uterus for this, surely with but little more dilatation the cervix can be dilated enough to deliver the baby which is in utero.

A physician must not subject the mother to too great a risk for the possible life of the child, but the rights of the child to live with due regard to the mother's future health must in every case be borne in mind. This was shown well in Case 33. The child was alive as shown by the pulsations in the cord, but as soon as the patient strained down the pulsations ceased. I had to disregard the amount of pain I caused her for the sake of her child and therefore thrust my whole hand into the vagina in order to push up the head. In so doing I tore the perineum. The head was not pushed entirely out of the pelvis and the question came to mind whether to apply the forceps or to do a version and I chose the former for I felt the danger of sepsis was less from this than from a version. Especially so as the cervix had retracted over the head and I should not need to go inside the uterus. Forceps in the lateral position unquestionably saved valuable time in this case. The perineum was disregarded and the head quickly

pulled through it. An intact perineum meant a dead baby and there was no question what to do.

In this case, Case 33, postural treatment would have been of no avail for the head was in the pelvis and the uterus was contracting. In Case 32, the externe did exactly the proper thing in placing the woman in the knee-chest position and keeping her there until help came to him. This case emphasizes the reason why every patient should be told to go to bed the moment the waters break and stay there until her physician arrives. To a physician it should conclusively prove that he must go to a patient the moment he is informed that such an accident has happened. If one knows that the head is in the pelvis when the waters break, the chances of a cord prolapsing are very slight and the necessity for making a vaginal examination is not present provided the fetal heart is heard and is regular. But if the presenting part is not in the pelvis, a vaginal examination ought then without question to be made in order to rule out absolutely a prolapse of the cord.

Case 33 went forty-eight hours after rupture of the membranes before she started up in labor. All this time the fetal heart was watched and at no time was it irregular nor did its rate vary. The head I knew to be down low in the pelvis and therefore there was no indication to make a vaginal examination and yet the cord was prolapsed for how long a time no one knew. Had a vaginal examination not been made during labor the outcome of the case would have been far different. An occasional vaginal examination made with the care already described does no harm and may as in this case tell of threatening danger.

Prolapsed cords are more frequent in breech presentations, especially footling or double footlings, than in vertex presentations, because the presenting part does not so accurately fill the inlet. The same holds true with transverse presentations and in this condition the physician must ever be on the alert for this accident. Careful watching of the fetal heart and a vaginal examination immediately after the rupture of the membranes will do much to reduce the infant mortality from prolapsed cords.

With a high presenting part a version, unless there is some definite contra-indication, is the operation of election when a pulsating prolapsed cord is found. It is unusual to find a prolapsed cord when the presenting part is low; when discovered, forceps usually will be elected to extract the baby, and this is especially true if the patient is a multipara, where the resistance of the soft parts may quickly be overcome. No matter which operation you elect, forceps or version, be certain that the cervix is fully dilated before you attempt to deliver, for a delay caused by the cervix may mean the death of the baby. If the cord is not pulsating and is flaccid when the physician first sees it there is no indication to operate. By the time he can get his hands prepared there would be no hope of obtaining a live baby and it is unjustifiable to subject the woman to an operative delivery and risk of sepsis from a hurried operation when it is already known that the baby is dead.

SECTION VIII.

VERSION.

Case 34. FLAT PELVIS. ELECTIVE VERSION. POST-PARTUM HEMORRHAGE. This case was seen in consultation July 15th. Telephone message from the physician in charge at nine o'clock in the evening stated that he had in labor a patient with a contracted pelvis and that there was a question of performing a Cæsarean section. I saw the patient at ten P.M. and the following history was obtained. She had had three full-term children before this pregnancy. All were lost after hard operative deliveries. None of the children had been weighed and there is no clear story of what was done on the first two deliveries. On the third the patient was allowed to go into labor for four days and then a destructive operation was performed.

The present labor started at 3 A.M., July 15th. The patient did not send for her physician until half past two of the same afternoon when the membranes ruptured. When her physician saw her first she was in good labor with pains coming every ten minutes. He apparently made no examination, determining to let her continue labor. At eight o'clock he examined her and found her, he said, half dilated but the head could not be reached. He then called a local surgeon in consultation with the intention of having him do a Cæsarean section. The surgeon said he was busy but would see the patient in the morning and then would do the section.

The patient at ten P.M. was having pains every five minutes. Palpation showed a fair-sized baby lying in a left position. The head was freely movable at the brim. The uterus was soft between the pains, but slightly tender. There was a marked separation of the recti muscles. The whole abdomen was very pendulous. The fetal heart was heard in the lower left quadrant, 130 to the minute and regular. External pelvimetry gave crests 27.5 cm., spines

24.5 cm., external conjugate 18.5 cm. Patient's pulse 100. Temperature 99°. Vaginal examination showed the severe tears of the previous deliveries. The whole hand could be inserted into the vagina without ether. The os uteri was half dilated and cervix was thick. My closed fist could with difficulty be passed between the promontory and the symphysis.

The physician asked me to talk with the surgeon in regard to doing a section the next morning. I flatly refused to, saying I felt if a Cæsarean should be done under these circumstances it would be nothing short of malpractice. I advised a manual dilatation and an elective version because of the flat pelvis and the pendulous abdomen. I said I thought a living child could be obtained. By this time, eleven o'clock, the patient had been in labor some twenty hours without making progress and the membranes had been ruptured about nine and I again insisted that a Cæsarean was absolutely contra-indicated.

After much arguing my advice was finally taken and we completed as quickly as possible the preparations for delivery.

The kitchen table was brought to the patient's room and when all was ready she was placed upon it and etherized. There was a good supply of hot corrosive solution 1–3000 made ready and a pail of hot water was at hand in order to resuscitate the baby. The usual instruments were on a nearby table. The patient's legs were held by two friends. When she was under the ether she was carefully scrubbed up by the assistant I had taken with me. No douche was given. The vulva and vagina were thoroughly cleaned with 70% alcohol. She was then catheterized and some four ounces of urine obtained. The perineum needed but little dilatation. The cervix dilated readily and when fully dilated, the cervical ring was felt intact. The closed fist was then brought through the cervix slowly three times and there was no resistance. No contraction ring was felt. The closed fist could be brought through between the promontory and symphysis without great difficulty but with the thumb out it was a very tight fit. The position was determined to be O. L. A. My assistant gave me fundal resistance as the left hand was passed into the uterus along the child's abdomen;

without difficulty, a foot was found. I then told the assistant that the head would go up on the left to the fundus. Traction downward was made on the seized foot and it was seen to be the right and the anterior leg. A long loop of cord came down and it was at once seen to be between the legs. It was slipped over the leg without difficulty.

With traction downward on the leg the posterior buttock at once came to the perineum and was delivered without difficulty by a finger in the groin. The left arm was the perineal and was not extended and was delivered with ease.

The buttocks had come down in the right oblique diameter and the shoulders were kept in this diameter. In order to obtain more room and because the right arm was extended the baby's body was turned to my right, making this, the right arm, now the perineal. With my right hand I went up over the shoulders along the extended arm and gradually was able to bring down and to flex out the arm across the face. The shoulders were then kept in line with the antero-posterior diameter of the pelvis with the hope that the bitemporal diameter of the head would come through in the antero-posterior diameter of the pelvis. With traction downward on the body combined with excellent suprapubic pressure from my assistant the head descended through the brim and as it came to the perineum the occiput was rotated forward and then readily delivered. There was at once a severe hemorrhage. The baby cried at once, its cord was clamped and cut and it was given to the assistant.

The uterus was relaxed and the bleeding was profuse. The gloved hand was at once washed off in 70% alcohol and passed into the uterus. The lower half of the placenta was found detached and it was at once manually removed. It was, at this time, noticed that the cervical ring was intact and the uterus was not ruptured. Inspection of the placenta showed it to be intact and that all the membranes were probably present. The patient still was bleeding but not as freely; the uterus did not contract. A five-yard packing strip was at once soaked in 70% alcohol and an end carried up into the uterus. The uterus was held from above by the

physician-in-charge. The uterus was firmly packed as was also the vagina. About four yards were used. The bleeding stopped. By this time ergot intramuscularly had been given twice. The uterus was held firmly from above and ice was put to the fundus. A pad was put on the vulva and the patient was at once put back to bed with a pulse of 140 but looking in fair condition. There was no attempt made to repair the fresh slight tear of the perineum. She soon came out of ether and began throwing herself about. She was given one-sixth of morphia subcutaneously and became quiet. The uterus was held constantly and an hour after delivery was staying well contracted and there was no bleeding. Pulse came down to 120 and was of good volume.

Examination of the baby showed that no limbs were broken, no paralysis was present. Cried well and apparently was in good condition. It was not weighed or washed, simply oiled and done up in absorbent cotton and kept warm. Estimated weight seven pounds. We left at three A.M. both patients in good condition.

July 16. This afternoon I went out to remove the packing. The uterus is hard and but slightly tender. Temperature is 100°. Pulse 100. Of excellent volume. She has not vomited and has taken plenty of nourishment. She has not voided urine. She was put across the bed and the packing slowly removed. The packing was not entirely soaked through with blood. There was no bleeding. She was then given an intra-uterine douche of two quarts of sterile salt solution followed by one pint of 70% alcohol. This latter was given very slowly. It was now seen that the perineum was torn only slightly more than before and I left it to granulate.

July 18. Physician reports the patient's temperature as 100.4°. Pulse 90. She has voided regularly and the bowels have moved. Breasts are engorged but the baby is nursing them out fairly well.

August 1. Telephoned to-day to the physician-in-charge and he says the patient has made a good convalescence. She ran no temperature. Is now up and about the house and nursing the baby.

Management of a Post-Partum Hemorrhage.

The above case is a typical example of a severe post-partum hemorrhage. Some writer has said that a physician's skill in obstetrics may be measured by the rarity of post-partum hemorrhages which occur in his practice. Unquestionably this is true for the watchful painstaking man scarcely ever sees bleeding which may be called a hemorrhage. It must not, however, be inferred from this that in every hemorrhage the physician is to be blamed, for that is far from the truth. The physician, who in normal obstetrics has a half dozen more or less severe hemorrhages a year is without doubt doing poor obstetrics and should go carefully over his technique for there is a grave error somewhere in his work.

Hemorrhage is likely to occur in cases where there is a slow, drawn-out labor without progress or where there is marked over-distention of the uterus as in the case of twins (already mentioned), or in hydramnios, either acute or of gradual onset. It is seen when the labor is hard and no progress is made or where the labor is precipitate. In a word it may occur whenever the mechanism of normal labor is interfered with in any way.

In Case 34 the direct cause of this hemorrhage was the partial separation of the placenta allowing the sinuses to bleed freely. The type of hemorrhage was primary in that it occurred at once after delivery of the child (it also would have been called primary had it followed at once the delivery of the placenta), and it was external because it was seen. Opposed to these two divisions are internal or concealed and secondary post-partum hemorrhage. In internal the blood distends the uterine cavity; its exit is stopped either by the contracted os uteri or by the placenta. In this type of hemorrhage the uterus is never properly held and if the hand is placed on the fundus a resilient tumor is felt which, if pressed upon firmly, quickly becomes smaller, coincident with the expulsion from the vagina of many large blood clots and much free blood, the amount depending, of course, upon how long the hemorrhage has been going on, upon how careless and inefficient the nurse and physician may be. Secondary post-partum hemorrhage is practically always due to the

retention of some of the products of conception. It is for this reason that the inspection of the placenta becomes of such importance. A cotyledon, portions of the amniotic sac or a placenta succenturiata may be left behind. In Cases 12 and 33 it was known that some of the membranes were retained but as the uterus remained well contracted and there was no bleeding there was no indication to explore the uterus. If the uterus acts well and there is no bleeding I believe it is better obstetrics not to explore the uterus even when it is known that there is something left behind. Only under one condition do I enter the uterus, even when there is no bleeding and that is when I am positive there is a placenta succenturiata and the patient is where immediate aid cannot be given her should bleeding occur. The danger of sepsis from entering the uterus in such condition far outweighs the probability of serious hemorrhage. It should be needless to add that one's aseptic technique in entering the uterus in these conditions must be perfect.

A placenta succenturiata is an anomalous development of placental tissue in the membranes. Blood vessels always lead to this placental tissue from the main body of the placenta. If on inspection of the placenta and membranes, blood vessels are seen running off from the placenta on the membranes and the broken ends of the vessels are seen, this is conclusive evidence that a placenta succenturiata is present.

The fundamental treatment of post-partum hemorrhage is prevention. This has already been covered in the management of normal labor. A badly managed third stage is more often responsible for hemorrhage than any other one cause. Again must it be insisted upon that a hand must be kept on the fundus from the expulsion of the child until after the completion of the third stage, when the uterus is firmly and permanently contracted.

One must be prepared to meet this emergency in every delivery and for that reason the instruments, salt solution, gauze and ergot must be ready at each delivery. In Case 34 the outpouring of blood was tremendous. One who has never seen a serious post-partum hemorrhage can scarcely realize what a flooding occurs. Had the preparations for combating

hemorrhage not been ready, the life of this patient would have been seriously jeopardized. Even if one has everything ready, occasionally the bleeding will be so rapid that temporary checking of the bleeding must be obtained at once. This can be done as in Case 38 by thrusting the gloved hand into the vagina, placing the four fingers and thumb about the cervical ring in the culs-de-sac and with the other hand about the fundus squeeze the uterus tightly on itself. In Case 38 this was sufficient and quickly the uterus contracted and the bleeding grew less. Another means is to thrust the whole hand into the uterus, clench the fist and then give firm counter pressure on the uterus through the abdominal wall. The objection to this method is the danger of infection. This objection, however, is true of all means we have of stopping a severe hemorrhage.

The commonest method in vogue to-day to stop a post-partum hemorrhage is to give a copious hot, 115°, sterile douche or one of corrosive sublimate 1–10,000. In Case 30 this was used and the uterus at once began to contract. In Case 34 the outpouring was tremendous and I packed the uterus at once. It is in such a case that the value of the five yard piece of sterile gauze is shown. Never pack the uterus with small pieces of gauze for the danger of leaving one behind is great and also the difficulty in removing them is much greater than if but one piece is used. How much to pack into the uterus experience alone will tell. The point to be remembered is that over distention of the already poorly acting uterine muscle must not occur, yet the entire cavity must be filled and also the vagina. It is a doubtful procedure to pack the vagina alone and not the uterus. To this statement there is one exception and that is when the uterus acts well and the bleeding is from the cervix or perineum. Then the vagina alone may be packed.

In Case 34 the bleeding started from a partially separated placenta. Before any effective means can be used to check an hemorrhage the uterus must be empty. Either the placenta must be expelled by Credé's method or it must be removed manually. Be sure that the placenta is intact with all the membranes, for if the membranes are left behind where the

uterus is already bleeding, more bleeding will undoubtedly follow.

Coincident with the emptying of the uterus ergot should be given intramuscularly. Whether the extract from the posterior lobe of the pituitary body will prove more efficacious than ergot in making the uterus react, remains to be more fully investigated. I have given it many times with excellent results where the uterus was relaxing and a constant oozing taking place. Both preparations, pituitrin and hypophysin, are apparently reliable. They act much more quickly than ergot but their action is of much shorter duration and for that reason ergot also should be given.

Gentle manipulation of the uterus together with ice to the fundus will in the milder degrees of hemorrhage prove sufficient, but in a true post-partum hemorrhage they are not to be relied upon except as aids to more efficient means.

In very rare cases salt solution may have to be given intravenously. Unless the physician who attempts this has had experience in doing this little operation, he had much better not try it for, simple as it seems, there are many pitfalls for the beginner. I almost never give salt solution under the breasts for post-partum hemorrhage, for I believe that if patients are in such a condition that they need it, it is better judgment to give it directly into a vein. Here it acts at once, while if it is given under the breast there is an appreciable time before it is absorbed. If one wishes to give salt solution the rectum is always available, and it is astonishing to see how much may be quickly absorbed in this way without disturbing the patient.

A uterus that has been packed should be held firmly from above until it recovers its tone and remains hard. There can be no time limit to this holding. Gradually as the tone returns, the intervals during which the uterus is not held may be increased, but at first this increase must be very slow.

In the majority of cases the packing is left in the uterus about twelve hours; then it is removed. The patient is then given a douche of sterile water followed by a pint of 70% alcohol. In taking out the packing strict asepsis must be observed. The patient is put across the bed. The vulva

wiped off with 70% alcohol. The physician's hands are prepared as for a delivery and sterile gloves put on. A rat-tooth forceps seizes the presenting gauze and gradual traction is made on it until it all is removed. A bivalve speculum is inserted into the vagina and the os uteri brought into sight. The cervix is then wiped off with alcohol and an intra-uterine nozzle is passed directly into the uterus. The water must be running before the nozzle is inserted in the uterus. The bottom of the douche bag or can must be on a level with the bed, in other words the water must run without force. After the uterus is washed out with two quarts of sterile water, a pint of 70% alcohol is allowed to run in very slowly, and all that will is allowed to remain in the uterus and vagina. The nozzle is removed and a sterile pad is put in place and the patient turned about and made comfortable in bed.

As yet there have not been many cases reported of direct transfusion of blood in cases of severe post-partum hemorrhages. There are, especially in hospital work, many cases where transfusion might be done and brilliant results obtained. Since the technique of this procedure has been so materially simplified, without doubt more and more reports will appear of the successful results of transfusion.

In the after care of a patient who has had a severe post-partum hemorrhage, food and rest are the two necessities. Small amounts of liquid nourishment must be given as soon as possible and repeated at frequent intervals. Then gradually the food is increased until the patient is having a full nourishing diet. Morphia in small doses will give the required rest. Generally there is no indication for the use of drugs. The liability of the patient to infection due to her lowered resistance is present in these cases and therefore the aseptic technique must be more rigid, if possible, than in normal cases.

Case 35. FLAT PELVIS. ELECTIVE VERSION. This patient is the same as in Case 22. I knew nothing more of this woman until the following December, eleven months after the previous delivery took place. She entered the Boston Lying-in Hospital at 10:15 P.M. with the following story: She says she is at full term and that the pains began at one P.M. to-day. She sent for an externe at six o'clock and in the usual routine of the hospital the house officer saw her at eight. He then found the head lightly engaged, os fully dilated and large caput present. He noticed that the promontory was very prominent. The house officer at once reported the patient to the physician-in-charge of the out-patient department for the month and he advised that she be brought into the hospital at once because of her previous operative history. She refused to be brought in and only after considerable urging and much persuasion did she enter. She entered, as stated, at 10:15 P.M. As I was then at the hospital, the physician-in-charge of the out-patients asked me if I would see the case for him, which I did. Palpation of the abdomen showed a fair-sized baby lying in a left position, vertex presenting. Uterus was soft between the pains which were coming every five minutes lasting one-half to three-quarters of a minute. Uterus was not tender and the patient was in excellent condition. Pulse 100, temperature normal. I advised immediate delivery and my advice was accepted. I made no vaginal examination for an excellent house officer had reported her fully dilated two hours previously. I told the house officer that I should attempt at once a version because of the flat pelvis. She was prepared at once and immediately etherized. She was placed in moderate lithotomy position. Under the usual aseptic precautions she was catheterized and the perineum thoroughly dilated. A large caput was felt; the head was movable above the brim, the position was O. L. A. The left hand was inserted into the vagina through the cervix and the head displaced. Good resistance was given at the fundus and the hand was pushed up into the uterus and the anterior leg seized. Version was then readily performed. Both arms were extended, but without great difficulty were freed. The shoulders came

down in the right oblique diameter, and were delivered. Traction was then made on the shoulders, which were held so that the bis-acromial diameter was in line with the antero-posterior diameter of the mother's pelvis, in the hope of bringing the head down in transverse diameter. With intelligent suprapubic pressure, the head came down through the brim. The occiput then rotated forward into the antero-posterior diameter, and the head was delivered without difficulty. The mother stood the operation well and there was no abnormal amount of bleeding. The placenta was delivered intact with all the menbranes five minutes after the birth of the child. The perineum showed no fresh tears. The cervix was not examined as there was no marked amount of bleeding. She went off the table with a pulse of 72. She was given ergot intramuscularly and an intra-uterine douche of sterile water followed by alcohol 70%. Examination of the baby which weighed six pounds two ounces showed that it moved its left arm poorly and every time it was moved cried out in pain. The greatest point of tenderness, apparently, was over the external condyle. The elbow was put up in acute flexion and kept that way for five days. It was then taken down and the baby was allowed to move it gradually. Examination of the mother on the twelfth day showed the uterus fairly well involuted, normal in position and a bilateral cervical tear and a slight yellowish discharge present. The baby weighed six pounds nine ounces and was gaining. It moved both arms equally well. The patient was warned that if she again became pregnant to place herself in charge of the hospital early and not to wait until the last moment.

Case 36. FLAT PELVIS. ELECTIVE VERSION. FORCEPS TO THE AFTER-COMING HEAD. The patient is the same as in the previous case. She applied for care early in her pregnancy and reported up to the ninth month. From then on we saw nothing of her until she entered the hospital at 4:45 P.M. November 22nd, two years after her last confinement. As I had already operated on this patient twice, the physician-in-charge of the hospital asked me if I would see her again. Palpation of the baby showed a very much larger baby than previously, and I strongly advised her to have a Cæsarean section. This she absolutely refused, and as she refused I decided to let her go into labor until she was fully dilated and then to do a version as the operation of election. She was not examined vaginally because of the possibility that she might change her mind and a Cæsarean section be done. Membranes ruptured, however, at 8:15. She was then examined vaginally, and it was found that the os uteri was fully dilated. Position, occiput left posterior. Fetal heart was 120 in the left lower quadrant. Uterus was acting well. Pains coming every four minutes, lasting one minute. The head was free above the brim, and was making no attempt to come into it. Patient was then etherized and placed in lithotomy position. The legs were held by nurses. With excellent resistance on the fundus I went up and seized the anterior leg. Brought it down readily. There was no difficulty with the version or extraction until I came to the extraction of the head. With one traction I could not gain anything and because of the marked increase in the size of the baby I put forceps at once to the after-coming head, and with the combined efforts of forceps to the after-coming head and suprapubic pressure I delivered the baby. The baby was asphyxiated but it was soon resuscitated. There was a deep cervical tear on the left, which bled profusely. I repaired this tear at once with two catgut sutures and the bleeding ceased. The placenta came away intact with all the membranes. Intra-uterine douche was given followed by 70% alcohol. Ergot intramuscularly. She went off the table with a pulse of 120. Weight of baby was seven pounds and five

ounces, one pound more than the previous baby. The patient made an absolutely normal convalescence, but on December 4th developed a positive culture of diphtheria as did also the baby. She and the baby were then transferred to the South Department of the Boston City Hospital. The baby at that time weighed seven pounds and eleven ounces. A report from the hospital on December 29th said that both patients were discharged well on December 23rd. Vaginal examination of the patient just before she left the Lying-in Hospital showed the uterus still slightly enlarged. Normal in position. Vaults were free. Marked cervical tear on the left running into the left vault. Excellent perineum.

Summary of Indications for and Technique of Version.

The four chief indications for performing a version are (1) prolapse of the pulsating umbilical cord, (2) malpositions of the fetus, especially transverse presentations, (3) hemorrhage, consequent upon the pregnancy; this includes placenta prævia and accidental hemorrhage, (4) conditions of the pelvis, chiefly flat pelvis. To these four indications must be added the personal equation of the operator for unquestionably in the same type of cases one operator will elect a high forceps while another will choose a version as the operation of election. This personal equation in operating can never be eliminated, nor is it desirable that it should. Each experienced operator must be guided by the results he knows he can obtain and not be tied down to any rule but the beginner should follow the rules laid down by the majority of experienced operators until he has had sufficient experience to settle for himself each individual problem. Five of the preceding six cases are examples of the first and fourth indications. The second and third indications are dealt with in other cases under transverse presentations and placenta prævias. I shall only discuss here the technique of performing version and applying forceps to the after-coming head, for the extraction has already been explained under breech delivery and extraction (pages 173–197). The preparations for the version are the same as for all operative

deliveries. Remember, a version is not to be attempted except in grave emergencies unless your instruments including forceps are ready. Also a pail of hot water must be at hand to resuscitate the baby, for some degree of asphyxia is most common. As essential as it is in forceps deliveries to have the perineum and the cervix fully dilated, it is even more essential that these conditions be fulfilled when version is planned. More than once I have seen the after-coming head held up by the constricting cervix and delivery accomplished only by much traction resulting in severe lacerations of the cervix and perineum.

The patient is etherized to full surgical anesthesia before any attempt to turn is made. While this is being accomplished the patient is placed in the dorsal position, legs held by a leg holder or by assistants. Aseptic preparations completed, the bladder is emptied without fail. Sterile towels and hot sterile water or corrosive solution 1–3000 are at hand. Then proceed to the dilatation. In the above cases the os uteri was fully dilated except in Case 31. Here the cervix was thin and dilated up very readily. Never fail to overcome the resistance of the cervix. It may seem as if time were wasted but be assured it is valuable time gained. This is seen in this case for there was no difficulty with the after-coming head. Determine the position of the fetus in utero accurately. The hand, the palm of which faces the baby's belly is the hand which is pushed up carefully into the uterus. In other words, in left positions the left hand, in right positions the right hand is used. Never start to push the hand up into the uterus unless you have strong resistance on the fundus. Once I did this without resistance in a placenta prævia and tore badly the lower uterine segment. If you have not with you skilled help, choose the most intelligent person about and tell him or her what you want done. In pushing up the hand if you feel the uterus contract, stop where you are and make no attempt to go higher. When the contraction has ceased, begin again the search for the foot. If the membranes are ruptured well and good. If they are not they must be before the foot is seized. Objection has been raised to pushing the hand upwards between the amniotic

sac and the uterine wall because of the increased danger of infection. Again and again I have done this without any subsequent rise of temperature. The advantage of this is that your forearm acts as a cork and no liquor escapes until the version is begun. If you rupture the membranes before you go up for the foot, have your hand inside the cervix at least, so as to keep as much liquor as is possible within the uterus, for version then is much more readily performed. When the proper hand is within the cervix it should not be brought out of the vagina until the foot has been seized and brought down. Be sure you seize a foot and not bring down a hand. Almost every operator of any experience has made this mistake. The heel is the diagnostic point but other points help one settle whether it is the foot which is grasped or the hand. One can close the thumb over the palm in the hand and the fingers will grasp your fingers.

Attempt to seize the anterior foot; this is best accomplished by following up the anterior thoracic wall until you reach the flexed anterior thigh and then following down the thigh to the foot. The difficulty in getting the anterior foot generally lies in the operator feeling about aimlessly with the hope of meeting what may be a foot. Remember if you meet a small part in the uterus at once, the chances are that it is not a foot; the feet in a vertex presentation are practically never within easy reach but always well up within the uterus. The foot found, grasp it by the heel, the index finger over the heel, the middle finger in front over the dorsum of the foot. The thumb is then brought up on the opposite side. I practically never bring down both feet although there are many operators that always attempt to do so.

As the operator starts traction downward on the leg, he tells his assistant which way the turning is to take place. The assistant then puts his hand beneath the vertex and pulls it gently upward towards the fundus. In some of the above cases this was of much aid in turning. If you are alone and you cannot start the version place a sterile towel over the abdomen and push the head up from the outside. Occasionally you may have to put a fillet (see page 360)

on the foot and draw down on this, while with the other hand in the vagina you attempt to displace the head upwards.

The difficulty in performing a version is usually in the starting of it. This overcome, and the head in the fundus, the remainder of the delivery is as in the extraction of the breech which has been fully described. The reason for seeking the anterior foot is that if the posterior is obtained the anterior buttock comes against the symphysis and retards the delivery. If the baby is small it makes no material difference but if it is large the delivery may be so delayed that the baby will be lost. If the posterior is brought down, then it must be rotated forward so as to make the posterior buttock the anterior. This is done by traction downward combined with rotation on the leg.

In Case 32 after the delivery was completed I explored the interior of the uterus. There is a definite risk in doing this of infecting the patient and unless you have a freshly sterilized pair of gloves to put on it should not be done. But if the version is difficult, it gives much peace of mind to find by exploration the uterus intact, and should a rupture of the uterus have taken place, immediate treatment may be begun.

Reference to Case 22 which is the same patient as Cases 35 and 36 shows clearly the contra-indications for version. They are a tonic uterus, the presence of a tight contraction ring, and a uterus which is dry, that is, one where the liquor has drained away. Another contra-indication, but one which it should be unnecessary to call attention to, is excessive disproportion between the child and the pelvis. This contra-indication is of course true for any operative delivery by the vagina. The higher the contraction ring becomes, the thinner is the lower uterine segment and the more dangerous becomes any operative procedure. Forceps is less dangerous than a version under these conditions and if the baby is in poor shape or dead, a destructive operation should be done. One dislikes intensely to perform a destructive operation on a living child but if by the operation chosen death of the fetus follows and morbidity of the mother is great, then a destructive should be done to safeguard the mother. In Case 22 there was no possibility of performing a

pubiotomy as the patient absolutely forbade any "cutting operation." Further, in this case pubiotomy would have been a doubtful procedure as the baby was in not too good condition, as shown by the fetal heart.

The technique of forceps to the after-coming head is difficult to describe. There are certain points that may be emphasized. The child's body and arms are in the way and to get them out of the way the simplest and best means is to take a sterile towel and wrap it quickly about the child. The towel should be first placed under the baby's thorax, the thorax resting in the middle of the towel. Then the ends are brought about the back first one end and then the other. Thus applied the towel holds the arms securely at the baby's sides and the ends of the towel do not get in the operator's way. The body is then drawn upward into as near a vertical position as is possible and the feet given to the nurse or anyone who is helping you to hold in this position. Care must be taken not to let your hands touch anything which is not sterile. The left blade of the forceps is at once grasped and the fingers of the right hand put into the vagina and the blade placed on the left of the mother's pelvis. The right blade is then placed opposite this first blade. The body being held up, the forceps must necessarily be put on a little differently than in the oncoming head. Here the handle of the forceps is first held nearly horizontal and to the opposite side of the patient to the name of the blade, i.e., if it is the left blade that is applied the blade is held well to the patient's right. The position of the right blade when the application is begun is just the opposite. Unnecessary time must not be taken to get a perfect application of the forceps. If the forceps lock easily and on the first traction do not slip, let well enough alone. Traction is made downward and backward or in the direction necessary according to the height of the after coming head. A word of warning must be given, — make absolutely certain that the forceps are placed within the cervix, never under any circumstances outside of it.

Traction on the forceps is combined with suprapubic pressure and the combination is most efficient. If forceps

had not been applied to the after-coming head in Case 36, I doubt if the result would have been so good. A baby will stand considerable pulling and mauling but the best results unquestionably are obtained with the minimum traction. For this reason if with two or at most three strong tractions on the baby's body and neck combined with intelligent suprapubic pressure no advance is obtained then put forceps on the after-coming head at once. My chief reason for advising this procedure is because it takes the terrific strain off the neck muscles and ligaments which all physicians know must necessarily come in a hard extraction. Many times I have seen much force used in the traction and the baby finally delivered only to die in a few moments when if forceps had been applied the results might have been otherwise. By the use of the forceps less traction is needed on the neck. Forceps to the after-coming head is oftentimes one of the hardest obstetric operations there is to perform. And because of the difficulty one may encounter with an after-coming head, a hard extraction by the breech becomes a very serious obstetric procedure. I well remember helping a skilled physician with a version and extraction that he had to perform. He asked me to come with an etherizer to help him. When the preparations were completed and the patient etherized he did a beautiful version and extraction as far as the arms. These he found extended. He attempted to deliver the posterior one but could not bring the arm down. His hand was tired and I at once attempted to get the arm and succeeded and then turned the baby so that the anterior arm became the posterior. He then delivered this arm after much difficulty. Traction on the neck with most excellent suprapubic pressure gained nothing and he then put forceps on the after-coming head while I held the body as above described out of his way. By hard traction on the forceps and suprapubic pressure the head was extracted and he gave the baby to me to resuscitate while he stayed scrubbed up to look after the third stage. The baby soon cried and was apparently none the worse for its hard delivery. I mention this case to show the importance of having help at hand in a difficult delivery.

One may say that such help cannot always be had even if it is sought. It must be planned for ahead of time. Physicians must be willing to call upon each other. The difficulty is not that help cannot be obtained but arises from the fact that the majority of physicians do not think and plan ahead. They dislike to call for assistance when there finally may be no real need. Except in grave emergencies a version and extraction ought not to be attempted unless a second physician is present.

SECTION IX.

ACCIDENTAL HEMORRHAGE OF PREGNANCY.

Case 37. PREMATURE SEPARATION OF A NORMALLY IMPLANTED PLACENTA. April 9. Patient is seen this morning for the first time at about seven-thirty, in consultation. The following story is obtained: The patient is nearly at term in her first pregnancy as her last menstruation was on July 3rd. She has had an absolutely normal pregnancy. Her blood pressure has not been over 120 mm. and there has at no time been any albumin in the urine. At half-past five this morning she got up out of bed and went to the bathroom to have a dejection, and as she came back to bed she was seized with a sudden sharp pain in the left lower abdomen. She then noticed that there was some moisture at the vagina and on investigating she found that blood was coming away. She sent at once for her physician and he saw her about half-past six. She was then having slight abdominal discomfort and there was a slight trickling of bright red blood from the vagina. He did not examine her but sent her at once to the hospital and sent for me. When I saw her she had good color and was complaining only of slight abdominal pains. She had no fresh bleeding from the vagina, only a slight amount of dark colored blood. Her pulse was 86, of good quality, and temperature was 98.6°. Palpation of the uterus showed a full term uterus, though apparently a small baby. The head was above the brim. Position not determined. On palpating the uterus the patient complained that it hurt her, especially on the left side. Contour of the uterus was normal. The uterus was harder than normal and at no time did it completely relax. No fetal heart heard. Vaginal examination showed a tight vagina; cervix was not taken up and the os not dilated. There was no sensation of any bogginess in the lower uterine segment.

Diagnosis: Premature separation of a normally implanted placenta.

Treatment: I advised that a Cæsarean section be done at once as the operation of election. My reasons for this advice were that the diagnosis I felt was correct and therefore the treatment indicated was to empty the uterus as quickly as possible. In the presence of an undilated birth canal, Cæsarean section was the safest procedure. The advice was accepted by the husband and wife with the understanding that the baby was probably dead at this time.

Preparations were immediately completed for a Cæsarean section. The abdomen was dry shaved and when everything was completed she was etherized and the abdomen prepared with iodine. An incision to the left of the umbilicus and at its level was made. Coincident with this incision 10 minims of ergatol and 1 cc. of pituitrin were given. The abdomen was opened without incident. No walling-off gauze was placed. Uterus incised and in making the incision the membranes presented. As the incision in the uterus was completed it was seen that there was blood coming from between the uterus and the membranes. Beneath the membranes was seen meconium stained liquor. Membranes immediately incised and meconium stained fluid escaped. A dead baby was immediately extracted. The placenta was found, almost entirely separated on the left side. Between the membranes and the uterine wall was a thin layer of blood over nearly three-quarters of the entire uterus. By the time the baby, the placenta, and the blood clots were removed the uterus was contracting, and although there was bleeding there was no question of doing a hysterectomy. Uterus was now sewed up with interrupted deep sutures of chromic catgut No. 2, and a superficial layer with No. 2 catgut, then the entire incision oversewed with chromic catgut. The patient's pulse as the uterus was being sewed was 160. Some of this was due to the fact that she was under very slight anæsthesia. Uterus continued to act well and before the abdomen was closed several large clots were expelled by vagina. The abdomen was closed in layers in

the usual manner. She went off the table with a pulse of 120 in good condition.

Catheter specimen of the urine just before operation showed it to be normal in color, reaction acid, specific gravity 1.004, slightest possible trace of albumin by nitric acid and by heat. Sediment showed a few renal cells, an occasional leucocyte, but no casts were seen in the one specimen.

April 15. Telephone message to-day from the doctor in charge saying that with the exception of considerable nausea and vomiting after the operation the patient made an excellent recovery and at no time has the temperature been over 99°, the pulse running between 70 and 90. In every way is her condition satisfactory. Her breasts filled up on the third to fourth day but rapidly subsided by being left alone.

Case 37A. PREMATURE SEPARATION OF A NORMALLY IMPLANTED PLACENTA. July 19. Telephone message from my house officer saying that a physician had just sent in a case to the hospital with a diagnosis of placenta prævia, that the vagina is packed and that she is bleeding slightly. Pulse 80, temperature 98°. The house officer says she is in slight labor and in good condition, though somewhat anemic. I saw her at once and got from her the following story. She thinks she is about eight months advanced in her second pregnancy. Her first pregnancy terminated in a normal delivery and the child is living and well. She waked up this morning at six o'clock and found she was bleeding slightly from the vagina. Slight labor began at half-past six and she sent for a physician at once. When he came he packed the vagina and sent her to the hospital. She arrived at the hospital at half-past nine and I saw her about ten. She then had a pulse of 80. Her pallor was marked. Palpation showed the abdomen was tense. Uterus was the size of a full term pregnancy. Palpation of the fetus was not satisfactory though I thought the vertex presented. Palpation caused much pain. The uterus was tight, although slight contractions of the uterus were evident. No fetal heart was heard. Preparations for vaginal examination were immediately made and two small strips of gauze were removed from the vagina. No bleeding accompanied the

removal of these strips. Os was then found to be dilated four fingers and very thin; no placenta was felt. Membranes were not ruptured and a vertex was presenting.

Diagnosis: Separated placenta.

I advised that she be delivered at once and she accepted this advice. The fact that she was four fingers dilated and cervix very soft, manual dilatation to full dilatation and delivery seemed the operation of election. Preparations were completed for the delivery. She was etherized and dilatation carried to full dilatation with great ease. Her pulse rose to 150 and her pallor was very marked. Pituitrin was then given subcutaneously, followed at once by ergot. The baby was lying in the left anterior position and an internal podalic version was readily done. The baby was extracted and with it came many large clots, some fresh blood and the placenta and membranes. The baby was dead. Ether was stopped. The uterus acted well and although there was no bleeding, it was packed with three yard packing strip. One ampule of ergot was given. There was no fresh perineal tear. She was put back to bed in marked shock and given a shock enema. Pulse was 150 and of fair quality. Uterus was held and as she was coming out of ether she was given one-sixth of morphia as she began to be restless. There was no bleeding. Pulse, though rapid, 150, steadily improved in quality and late in the afternoon had dropped to 100.

July 20. Temperature this morning 98.6° and pulse 84. Uterine packing was removed this morning and she was given a sterile water intrauterine douche followed by one pint of 70 per cent alcohol. To-night temperature went to 99.4° and pulse 90. She is in excellent condition. She is taking soft solids and drinking plenty of water.

July 21. Temperature 98.6° and pulse 80. Uterus is not tender and is well contracted. Three finger breadths above the symphysis.

July 22. Temperature this morning normal. Pulse 74. Breasts are slightly full. She is having ergot one dram three times a day. Temperature to-night 100.6° and pulse 84. Except for slight discomfort in the breasts she is in excellent condition.

July 25. Uterus involuting well. To-day is the tenth day and the patient sat up in bed. Her color is improving very rapidly. She is doing well and has absolutely no untoward symptoms.

July 29. Out of bed to-day. Lochia has practically ceased.

August 2. She is examined to-day for discharge. Perineum fair. Cervix shows stellate tear. Involution of the uterus is good. Position is good and the vaults are negative. She is not flowing any. Pulse to-day is 70, and the temperature has varied from normal to 99° in the past three days.

Summary of Accidental Hemorrhage of Pregnancy.

The above cases are on the whole fair examples of the so-called accidental hemorrhage which takes place in pregnancy. The term accidental is applied to this type of bleeding in distinction from the bleeding from placenta prævia which is unavoidable. By accidental we do not mean that trauma is necessarily the cause of this condition. Trauma either direct or indirect may be the cause. Disease of the placenta or of the uterine mucosa has been suggested as responsible for the condition. Many times no obvious cause can be found to explain the accident. Recently it has been suggested that a toxin may be responsible for this condition but as yet this theory has not been verified by other observers. Hydramnios with the sudden emptying of the liquor from the uterus may be the exciting cause.

The signs and symptoms of this condition vary according to the type of hemorrhage which is present, that is, whether the bleeding is external or internal, concealed, or these two combined. The one certain symptom which has been present in all cases I have seen is a change from normal in the contractions and feel of the uterus. This was present in these two cases. In the one case (Case 37) the uterus was described as harder than normal and at no time did it relax completely. In the other case (Case 37A) the uterus was tight.

Pain is another symptom which is always present. This

may vary from simple discomfort to severe cramplike pain localized at the point of separation of the placenta from the uterus, in other words at the seat of the hemorrhage (Case 37). Accompanying the pain is tenderness of the uterus to palpation. As the bleeding continues, the uterus becomes hard, boardlike and exquisitely tender on palpation. The more completely the bleeding is concealed, the more boardlike is the uterus on palpation. Whether the bleeding is external or concealed depends upon the position of the placenta in the uterus, upon the amount of hemorrhage, upon the tone of the uterine musculature and probably upon the denseness of adhesions between the membranes and the uterine mucosa. Some writers have reported the uterus soft and boggy. I have never yet seen this type of uterus.

This condition of accidental hemorrhage of pregnancy may occur without labor having begun. The patient may be found in profound collapse with no external bleeding or at most a very slight show of blood or blood-stained serum. Irregularity of the uterine contour may be found with great tenderness where this irregularity is. The fetal heart may or may not be heard, depending entirely upon how much of the placenta has separated. At the beginning of a separation the maternal pulse usually does not show much alteration in rate. Not infrequently even after the separation is complete, when the bleeding is chiefly concealed, the rate does not materially increase and if one goes entirely by the rate, the patient's true condition is not determined. This point is well shown in Case 37A where the pulse rate was only 80, yet the moment we began delivery it jumped to 150. In cases of this type the pallor is oftentimes the striking sign.

In this complication of pregnancy as soon as the diagnosis is made the uterus must be emptied as quickly as is possible. The condition of the birth canal will determine the method chosen to effect delivery. The above two cases show the reasons for the choice of method. In the first, the birth canal was rigid, in the second, soft and dilatable; for the first I therefore elected a Cæsarean and for the second man-

ual dilatation and version. In some cases where the birth canal is dilated, craniotomy may be the operation of election. Many obstetricians will elect to do a Cæsarean section for this complication under all circumstances. This I do not believe to be a proper position to hold. It is true that should the uterus fail to contract and the bleeding be uncontrollable, hysterectomy may be done at once. I am confident that time is a very important element in the successful management of these cases and if good results are to be obtained obstetricians must not delay at all or at most very little in the emptying of the uterus, but I am confident a Cæsarean section is not always indicated.

If the patient is in labor and the uterus acting well, in a few cases a Voorhees bag may be inserted to hasten the dilatation of the cervix. If a bag is used, as soon as it comes through the cervix the uterus should be at once emptied. Proper precautions must be at hand to meet a possible postpartum hemorrhage, and if much blood has already been lost the uterus should be packed without delay. In severe cases of this complication the patient may have to be transfused either during delivery or immediately after it. If means for a direct transfusion or for an intravenous salt solution are not at hand, then salt solution must be given by rectum either slowly by the drop method, or four to six ounces, every four hours. I have had no personal experience with the use of pituitrin or of ergot in small doses in order to increase the contractions of the uterus. In one of the above cases (Case 37A) I ordered an ampule of ergot and one of pituitrin as I was about to deliver, but I was confident that there would be no delay in the delivery of the baby or the placenta and that contraction of the uterus was of paramount importance.

There can be no definite treatment for this condition; there are too many variable factors present. The one point to keep constantly in mind is that the uterus must be emptied as quickly as is possible. In many of these cases the baby is dead and need not be considered. The method of delivery which gives the least amount of shock to the mother, other points being equal, is to be chosen.

SECTION X.

UNAVOIDABLE HEMORRHAGE OF PREGNANCY.

Case 38. PARTIAL PLACENTA PRÆVIA. MANUAL DILATATION. VERSION. EXTRACTION. The patient is seen in consultation May 18th. She is within two weeks of term in her first pregnancy. There is nothing to note of interest in her pregnancy until four weeks ago when without any known cause she was flooded by a sudden, sharp, short hemorrhage. She did not faint. She had no pains. She went at once to bed and telephoned for her physician. He saw her within half an hour and found her with a pulse of 80, bleeding but slightly. She had good color. There were no contractions of the uterus. He did not examine her at this time. Bleeding stopped entirely within three hours. She was kept in bed for three or four days and as there was no bleeding she was allowed to get up. The physician examined her the day she got up and at that time made a diagnosis of placenta prævia.

From then until to-night she had no more bleeding. She was in bed and was waked up by the flowing. She at once telephoned for her physician. When he saw her she was bleeding freely and had passed one clot the size of a man's fist.

I saw her within an hour of the first bleeding. She was not flowing. Pulse 90, regular and of good volume. Color good. Palpation of abdomen shows a full termed pregnancy. Position of fetus probably O. L. A. Presentation vertex with the head floating. While palpating the abdomen it was seen that the uterus was contracting. She said she had been having pains in her back for the last half hour. Contractions were now coming every five minutes and were increasing in severity. Fetal motion seen.

VAGINAL EXAMINATION: — Small introitus. Blood clot present in the vagina. Cervix is flush with the vaginal

vault and in pressing the examining finger in either lateral cul-de-sac, it comes upon a soft, doughy mass. Examination was not persisted in and no attempt was made to determine accurately the limitations of this soft mass or the amount of dilatation of the os uteri.

Diagnosis: Placenta prævia.

Treatment: I advised immediate delivery of the patient at the local hospital. The advice was accepted by the husband and wife and she was at once taken to the hospital.

The vulva was then shaved and she was carefully prepared. Slight bleeding again began. By the time she was prepared the instruments and other preparations for delivery were ready.

She was etherized and placed in moderate lithotomy position. Catheterized. The vulva and vagina then carefully washed with 70% alcohol. The vagina and perineum carefully and slowly dilated until the closed fist could be flexed out readily. Dilatation of cervix now begun. The cervix was fully taken up, the os uteri dilated two fingers and soft. Forefinger and thumb of the left hand readily pushed inside the os. Without difficulty dilatation was slowly and carefully carried up to full dilatation. As the dilatation was completed some of the placenta was necessarily loosened and it was then seen that most of the placenta was on the patient's left. The closed fist was brought down through the cervix three times. It was intact and offered no resistance to the closed fist.

With resistance on the fundus I then pushed the edge of the placenta, which was on her right towards her left pelvis with my left hand and then went up between the membranes and the uterine wall, peeling the membranes off, until I thought I was high enough to reach a foot. I then ruptured the membranes. My forearm acted as a cork, very little liquor came away. I felt for a foot and it was obtained with but little difficulty. I now told the etherizer which way I was going to turn, namely, I was drawing the leg down on the patient's right, and the head was going up on the left. He gave me material help in turning. The foot seized proved to belong to the anterior leg. It was brought down very readily.

A sterile towel was placed about it and with downward traction the posterior buttock was brought to the perineum. Finger was then put into the groin and with downward traction and lateral flexion of the body of the baby the buttocks were delivered. The bis-acromial diameter of the baby was now kept in the right oblique diameter of the mother's pelvis and traction brought the angles of the scapulæ into view. The perineal arm now sought with the operator's left hand. It was extended and after one or two attempts it was reached, brought down and swept out over the baby's face. The right arm was also found extended. The shoulders were readily turned into the left oblique diameter and the arm sought for and delivered. Excellent suprapubic pressure was now given and with but little difficulty the head was extracted.

The child gasped at once and in a few moments cried. The patient began to bleed at once profusely and the cord was immediately clamped and cut. The hands washed off quickly in 70% alcohol and then the placenta was removed manually. There was a tremendous gush of blood. I at once thrust my left hand into the vagina, my right hand above on the fundus as counter-pressure, and seized the cervical ring with my fingers in the culs-de-sac. This for the moment stemmed the bleeding and with massage on the outside, combined with ice, the uterus soon contracted. Ergot was given in the meantime intramuscularly.

Her pulse was now 120, but of good quality and she looked in fair condition. She was at once given a hot salt solution, intra-uterine douche and the uterus began to act steadily better. The bleeding became less and less. I was prepared to pack the uterus, but because of the steady improvement in the action of the uterus and because the bleeding became less and less I decided not to pack it.

There was a median perineal tear of the second degree, and I rapidly placed and tied three silkworm-gut sutures. The patient was cleaned up, a vulval pad was put in place and she was then put back to bed in very fair condition with a pulse of 120.

The uterus was carefully held for an hour and it remained

well contracted with only the normal amount of bleeding present.

She made an excellent ether recovery, pulse steadily dropped, and when I left two and a half hours after the delivery, she had a pulse of 72, of excellent quality.

The baby weighed seven and a half pounds, and was in excellent condition.

June 1. Note from the attending physician stating that the patient ran a slightly irregular temperature for the first few days. At no time, however, did the temperature rise over 100.4°, and the highest the pulse reached was 102. She is now up and about the hospital and will go home in a few days. The baby dropped to seven pounds and then began to gain. The mother is nursing. Lochia has ceased and there is no vaginal discharge.

Case 39. SEPARATION OF A LOW ATTACHED PLACENTA. LOW FORCEPS. PUERPERAL SALPINGITIS. The patient went through her pregnancy without difficulty. Her two previous pregnancies terminated in normal deliveries of seven and a half and eight-pound babies. The last child was born eighteen months ago. She expects her labor between the fifteenth and the twentieth of July. She is in excellent condition. All urinary analyses have been normal. Palpation of the abdomen July 1st showed a large abdomen, considerable amount of liquor present. Baby is freely movable. Small parts felt distinctly on the left with back on the right. Head is free above the inlet.

July 17. Last night she was very uncomfortable from irregular pains both in time and in severity. At no time did they come oftener than once in thirty minutes, but when they came they waked her up.

PALPATION: — Head is firmly fixed at the brim. Palpation is unsatisfactory as the uterus is very irritable and when touched contracts but without pain. Baby is very lively and causes much discomfort. Fetal heart is 140 in the right lower quadrant.

July 18. To-night at midnight patient was awakened by the breaking of the waters. She found the bed well soaked with blood-stained waters, and telephones that there was a slight discharge of bright red blood. I saw her at once. Abdomen much smaller. Fetal heart 130. Head well engaged in the brim. She says that the pains are coming once in fifteen minutes, are short and not severe.

VAGINAL EXAMINATION: — Cervix thin; os dilated three fingers. Careful examination, but no placenta is reached. Head is in the mid-pelvis. Sagittal suture is in the right oblique diameter and the posterior fontanelle is readily made out near the right sacro-iliac joint.

Two A.M. Pains still coming slowly, but of better strength and longer in duration. Fetal heart regular at 130; maternal pulse 80. There now is bright red flowing, distinctly more than the normal case shows. There is no alteration of the fetal heart and no rise in the maternal pulse. The uterus is relaxing well between pains.

Four A.M. From two until now there was no abnormal amount of show. The fetal heart has been listened to every half hour and there was no alteration in the rate. The pains were now coming every five minutes lasting one minute.

At four-thirty A.M. more bleeding occurred. Vaginal examination: — Os uteri two-thirds dilated and on the posterior wall of the uterus could be felt a soft pudgy mass, the free edge of which could be felt anterior to the posterior lip of the cervix. The head was just above the mass impinging on the upper part of this tongue of the placenta. There was blood on the examining finger.

As the pains were coming now every five minutes and there was no excessive bleeding and the maternal pulse and fetal heart showed no change, I decided to let her go on in labor hoping the on-coming head would successfully press down on the detached placenta and stop all further bleeding. The fetal heart now listened to every fifteen minutes and until half-past five it stayed regular at 130. I now found it to be 180, but regular, and shortly after it dropped to 100, but regular. Maternal pulse had gone from 80 to 110. I advised operative delivery in the interest of the baby at once. Preparations for delivery were speedily completed. Just before she was etherized the fetal heart listened to and found to be regular, 140 to the minute. Etherized, lithotomy position, with leg holder. Prepared in usual manner. Large clot of blood in the vagina, which was removed. Vagina wiped out with 70% alcohol. Examination showed that the os had retracted over the head. Head on the perineal floor, the sagittal suture in the antero-posterior diameter; posterior fontanelle at the arch of the symphysis. Perineum quickly dilated and the forceps applied to the sides of the pelvis and readily locked. On the first traction the head descended, followed by extension, and delivery very quickly accomplished. Baby cried at once. The cord was not pulsating and was clamped and cut.

The uterus contracted hard, but at once there came a steady ooze of blood. Patient's pulse 110. On the second contraction I expelled the placenta because of the steady flow. The placenta was intact and with it came all the

membranes and several small clots. Ergot was given intramuscularly. The uterus acted well and there was no further excessive bleeding. Examination of the perineum showed no fresh tear. She was cleaned up and a sterile vulval pad put on. The bleeding was soon within normal limits. The patient's pulse steadily dropped and an hour after delivery was 90 and of good quality. The uterus was held carefully because it had a slight tendency to relax. At the end of two hours it remained well contracted and there was no more bleeding than normal.

The baby was in excellent condition and weighed eight pounds.

The convalescence until the afternoon of the tenth day was absolutely uneventful. The baby nursed well and was satisfied. The highest the temperature reached was on the night of the fourth day when it was 99.6°; pulse 80. The breasts were full and tense. Bowels moved regularly every day. Lochia was sufficient; normal in odor and color.

The afternoon of the tenth day she was found to have a temperature of 102°; pulse 104; respiration 24. She complained of pain low down on the left side of the abdomen. The pain is a constant dull ache. She is able to lie on either side but is more comfortable on her back. She says she has had this pain off and on ever since she was married but has never had to go to bed with it, and it has never been severe enough to have a physician.

PHYSICAL EXAMINATION: — Throat and chest negative. Breasts full but not tender. Abdomen slightly distended and tympanitic throughout. There is no tenderness in either kidney region or in the upper abdomen. On deep palpation the fundus of the uterus can just be felt. It is firm and not tender. There is no tenderness in the right lower quadrant. Palpation of the left lower quadrant shows slight spasm on deep pressure and the patient complains of pain. No mass is felt. Examination of both legs is normal.

On the pad the patient had on there was a thick, yellowish discharge with foul odor.

Diagnosis: Puerperal salpingitis.

Treatment: Ice-bag constantly to the left lower quadrant. Enema at once and then half an ounce of castor oil, to be followed in two hours by another enema.

July 29. Another physician saw her for me to-day and the following notes are his: "Marked tenderness but not true spasm in the left lower abdomen. Abdomen otherwise negative. Vaginal examination:—Os tight; uterus well involuted. There is a tender mass the size of a hen's egg in the left cul-de-sac. Lochia profuse yellowish and foul smelling. Temperature 102°; pulse 120."

Treatment: He advised and gave an intra-uterine douche of corrosive sublimate 1–10,000. He had to dilate the cervix with a Goodell dilator in order to insert the douche nozzle into the uterus. This was accompanied by some slight bleeding. The first of the douche brought away considerable milky colored fluid.

Half an hour after the douche was given the patient had a severe chill, lasting for fifteen minutes. Temperature taken after the chill was over and found to be 104.2°; pulse 130. The ice was continued to her left lower abdomen. Nine P.M. temperature 101°; pulse 104. Less abdominal tenderness and no spasm.

July 30. Slept well last night. Profuse yellowish vaginal discharge of foul odor. Very slight abdominal tenderness. Temperature this morning 100°; pulse 92. She is having a light diet of soft solids. Bowels have moved twice since last visit. Temperature this evening 99°; pulse 92. No tenderness in abdomen. Vaginal discharge much less in amount, still foul. Ice continued as before.

July 31. I saw her to-day. Temperature 98.6°; pulse 80. Abdomen negative. Vaginal discharge has practically stopped. Ice-bag removed. Bowels kept open with cascara.

August 3. She got up to-day for an hour with no untoward result. Temperature normal; pulse 80. From now on she steadily gained strength and was soon about in her usual condition. She refused to have a pelvic examination the last time I visited her.

Summary of Puerperal Salpingitis.

This case is instructive from two points of view, first, the management of a partial placenta prævia and second, the diagnosis and management of a puerperal salpingitis. Discussion of the first will be taken up in the summary of placenta prævia.

The history and physical findings in this case are typical. The closer an attack of acute salpingitis comes to the delivery, the more difficult it is to differentiate from uterine sepsis. Careful weighing of the signs and symptoms usually will clear the diagnosis. In an attack of puerperal salpingitis the pulse and temperature do not rise generally for at least three days, more often not until the first week. The patient then is found complaining of pain on the affected side and the temperature shows a marked rise to 102° or 104°, but the pulse usually does not rise correspondingly. The patient does not appear at first sick. Complete physical examination rules out one organ after another until the pelvis is reached. Here the uterus usually can be palpated but it is not tender or soft as one finds it in a septic condition. If it is tender at all, careful palpation will show the tenderness localized at the point where the affected tube enters the uterus. Spasm of varying degrees is found over the affected tube. It may and often is so slight that tenderness alone is noted. The lochia varies much depending entirely upon whether the tube is draining through the uterus or not. If it is not the lochia corresponds to the usual progress of the puerperium. If the tube is draining the lochia is foul smelling, looking like pus. Any combination is therefore possible from normal lochia to a profuse purulent discharge. Vaginal examination is not remarkable. If the patient has had a long standing salpingitis then a mass may be found; but when the attack comes early in the puerperium and involution has proceeded but little, usually nothing definite is found. In this case on the eleventh day a small mass was palpated.

When the attack is left sided the diagnosis is relatively easy, but if it is right sided the differentiation between it and appendicitis is not easy. In appendicitis the tempera-

ture does not usually rise so quickly and if it does the pulse more nearly corresponds. In appendicitis, vomiting or nausea is usually present, but they are not in puerperal salpingitis. Spasm in an acute appendix is more marked than in salpingitis.

The treatment of a puerperal salpingitis that has been most satisfactory in my hands is to apply an ice-bag to the affected side, give mild catharsis, a light diet and if the pain is severe, small doses of codeia enough to relieve the pain but not enough to hide any possible symptoms. If the attack is right sided and appendicitis cannot be ruled out, then the bowels should be moved by enema, the patient starved and no opiate given until the diagnosis is cleared.

The treatment of this case I regard as absolutely bad, for with a diagnosis of puerperal salpingitis, an intra-uterine douche never should be given. The evil result of douching in this condition is well shown in this case by the chill which followed. As soon as the pressure of the pus in the tube is sufficient it breaks down into the uterus and discharges. In this case the tube was already draining and there was not the slightest indication to give an intra-uterine douche. I have never seen a tube rupture into the abdominal cavity. There is no reason why it should not occur, and if it should, the question of opening the abdomen might arise, but the general statement may be made that when a pelvic peritonitis occurs in the course of the puerperium it is usually much wiser to let nature manage the condition and keep the surgeon away. Nature's healing powers never are better shown than in puerperal infections, where there are large exudates in the pelvis. These are absorbed sometimes slowly, not infrequently with remarkable rapidity and leave no apparent damage to the pelvic organs.

If the temperature and pulse drop to normal after a diagnosis of puerperal salpingitis has been made and continue to remain normal, one may feel reasonably certain that the pelvic condition is clearing up satisfactorily. But if the temperature and pulse are slightly elevated one must be on guard for the formation of a pelvic abscess. Careful pelvic examination alone will confirm the diagnosis. One examina-

tion alone will not always settle the diagnosis but repeated ones of two days' intervals will undoubtedly settle the pelvic condition. If a pelvic abscess develops in a puerperal case and an operation is indicated, a vaginal section or puncture is always the operation of election.

Case 40. COMPLETE PLACENTA PRÆVIA. VOORHEES BAG. VERSION. Patient is sent into the hospital on November 26th with a diagnosis of complete placenta prævia. She entered the hospital at half-past ten A.M. with a pulse of 120, temperature 99°. She says her last menstruation was February 22nd and she expects to be confined at any time now. She has had a normal pregnancy up to one week ago when she began to flow slightly. She would flow a few drops at intervals during the day, a sufficient amount, however, to have to wear a pad. She has been up and about her home and last night about nine P.M. without warning she had a sudden profuse hemorrhage. She immediately went to bed and sent for a physician. She has had no pains. When she entered the hospital she was not flowing. Palpation shows a vertex presentation. Occiput left anterior. Large baby. Uterus soft. Patient not in labor.

VAGINAL EXAMINATION: — A vaginal pack presents. Removed, soaked with bright red blood. Cervix is not fully taken up. Os is rigid and dilated one finger. About the os can be felt a definite boggy mass. Presenting part is not in the pelvis. Promontory cannot be reached. Outlet is ample.

I decided because of the rigid condition of the cervix and the size of the baby that it was a question of putting a bag in through the placenta in order to soften and dilate the cervix or of doing a Cæsarean section. After due deliberation I decided to put a bag in under ether. The chief reason for deciding against a Cæsarean section was because of the vaginal pack which the patient said had been in the vagina since last night. After the usual preparations were completed a four-inch bag was put in through the cervix and an attempt was made to thrust it through the placenta. There was a sharp hemorrhage when the bag was pushed through the cervix. This ceased as soon as the bag was dilated. Bag was put in at twelve o'clock noon. Pains began almost at once and with each pain the bag was gently pulled. Fetal heart was carefully watched as was also the maternal pulse. There was no bleeding and no increase in the pulse rate, maternal or fetal. At half-past four bleeding became marked and the

patient's pulse rose to 130. I decided then to deliver her at once.

The bag was removed and the cervix found to be two-thirds dilated and very soft. Examination then showed that the bag did not go in through the placenta but only within the internal os beneath the placenta. Dilatation of the os uteri was completed readily and quickly. The hand was brought through the cervix three times and there was no resistance felt. The placenta was entirely over the dilated os. With resistance on the fundus from the assistant I then went up through the placenta with my left hand and seized the anterior leg. It was brought down quickly. The hemorrhage on going through the placenta was considerable. As soon as the leg was brought down however it ceased. Version was completed as quickly as was consistent with safety to the maternal soft parts. The bistrochanteric diameter came down in the right oblique diameter. The left arm was the perineal arm and was readily delivered and the right, the anterior, was then made the perineal. Rapid extraction of this arm followed. The baby was put across the right forearm and grasped about the neck, and with excellent suprapubic pressure the head was delivered without any difficulty but with a severe tear of the perineum. Baby was a large male child and was in pallid asphyxia. It gasped slowly and was put in hot water and gradually resuscitated by an assistant. Examination of the perineum showed that there was a tear through the sphincter but not into the rectum. There was profuse hemorrhage and with a fresh pair of sterile gloves I went into the uterus and removed manually the placenta with all its membranes. It was then seen that the cervical ring and the uterus were intact. Uterus acted badly, profuse bleeding continued. Ergot given intramuscularly. The uterus was packed at once with a five-yard packing strip of gauze. Bleeding immediately became less. Ergot was repeated. The bleeding gradually ceased. Pulse rose to 140 and the patient's condition was only fair. Three chromic catgut sutures placed in the deep perineum brought the internal tear well together. The torn ends of the sphincter were then seized and with chromic catgut sutures No. 2 the ends

were sutured. Three silkworm-gut sutures then placed in the perineum. One supporting silkworm-gut stitch placed through the sphincter. The patient was at once put back to bed and surrounded by heaters, but no stimulation given.

November 27. Temperature this morning 98°, pulse has dropped to 102. She was placed across the bed and the vulva wiped off with 1–3000 corrosive sublimate. With rat-tooth forceps the gauze was drawn out of the vagina and then out of the uterus. There was no bleeding. She was then given an intra-uterine douche of sterile salt solution followed by a pint of 70% alcohol. This morning her condition is very satisfactory. The baby weighed eight pounds, fourteen ounces and is in excellent condition. Patient's temperature to-night 98.8°, pulse 120.

November 28. Temperature 98°, pulse 100. Is voiding satisfactorily. Uterus is hard and not tender.

November 29. Temperature to-night 98.8°, pulse 108. She is in excellent condition. Perineum looks well and is not tender. Milk is coming into the breasts and the baby is nursing.

December 1. Temperature 98.6°, pulse 100. In excellent condition. Bowels moved to-day for the first time without difficulty voluntarily. As there was a diphtheria epidemic in the hospital and as the patient was in excellent physical condition, it seemed advisable to send her home and she went to-day with a trained nurse to her own home to be looked after by her own physician.

December 27. Patient's physician reported to-day to the house officer that the mother and baby had made a good convalescence. He had taken the stitches out of the perineum and a good result had been obtained. She had control of the sphincter both for gas and feces. She was up and about the house.

Summary of Unavoidable Hemorrhage of Pregnancy.

Two of the previous three cases were primigravidæ. From this it is not to be inferred that placenta prævia is more common in primiparous cases than multiparous cases, for such

is not the case. The essential point to remember is that any pregnant woman may present a placenta prævia, one of the most serious complications of pregnancy which a physician can meet. Any woman pregnant more than three months who has bleeding from the vagina in my opinion must be considered to have a placenta prævia until examination proves that such is not the case. If all physicians would take this stand, the high mortality which now occurs from this condition would be materially lowered. The nearer to term a vaginal hemorrhage occurs the more certain becomes the diagnosis of placenta prævia and the greater is the demand for instant intelligent oversight.

Vaginal bleeding, without cause, without warning, no matter whether it is slight or profuse, in the last three months of pregnancy, demands that the physician lay out his course of treatment accurately at once. If a physician is called to a case of bleeding towards the end of pregnancy and the hemorrhage has stopped when he arrives, it is my firm opinion he should not then examine that patient by vagina unless he is prepared to meet at once a possible severe hemorrhage. In Case 38, I made a vaginal examination very gently and took care not to put my finger inside the os uteri. The boggy sensation that the examining finger receives when the placenta presents is unmistakable even through the culs-de-sac. That, combined with the increased pulsations that are so often present and the bleeding without cause, makes the diagnosis of placenta prævia very simple. Until the physician is prepared to meet the hemorrhage he does not care to find out whether the implantation of the placenta is central or one of the marginal degrees. When he is prepared it is then justifiable to determine how much of the os uteri is covered by the placenta. Complete prævias usually bleed earlier in the pregnancy than do partial ones. This was shown in Cases 38 and 40.

The first bleeding may be slight as it was in Case 40 or profuse as it was in Case 38. In each of these cases no treatment was instituted after the first bleeding appeared except that the last mentioned case was kept in bed three days.

Theoretically there is no treatment for a placenta prævia

but to empty the uterus. The condition is one of inevitable hemorrhage and should be met when the mother is in good condition, not when she is in profound shock. Practically, the cervix of the uterus is the bar that holds us up in emptying the uterus at once. Any physician can divulse the cervix and empty the uterus. The object, however, is to empty the uterus only as quickly as is consistent with safety to the maternal soft parts.

Before going further into the treatment recall Case 38. The diagnosis of placenta prævia was made here four weeks before I saw the patient and yet she had been kept in bed but three days following the first hemorrhage. This should never be allowed to occur. If the diagnosis is made and delivery in some form or other is not at once to be undertaken, what procedure is the physician-in-charge to follow?

The patient should be put to bed immediately in a hospital where she can receive, when the next hemorrhage occurs, proper attention. If the case be surrounded at her home by all necessary safeguards, a nurse and physicians at all times within a moment's call, she may be allowed to remain at home and wait for the next hemorrhage, which is sure to come. But how often can these conditions be fulfilled? Even if they can be, the danger of waiting must be fully explained to the family and it must be made clear that it is against the best advice that this treatment is being carried out. The desire for a living child is great but the risk that that desire entails is oftentimes greater than is the probability of obtaining one. The child may be born alive only to die in a few hours. The delay may sacrifice the mother for the sake of an heir or for the baptismal rite.

The child has its right to live but in far the majority of cases, the child is premature and its chances of life are slight. I do not feel like subjecting the woman to any undue risk for the sake of a frail infant whose life is, at best, most problematical. To wait after a diagnosis of placenta prævia has been made is an added risk.

The question of waiting would be considered more strongly in an elderly primigravida where the probability of her becoming pregnant again was slight, than in a young girl. Again the

question of viability of the child would alter the final answer, but in any case the family must be told fully the pros and cons of the treatment advised. When a patient has reached eight months' gestation and a prævia is found, delivery without question must be undertaken. The method to be used for emptying the uterus will vary according to the conditions found. In Case 39 the flowing could hardly be called a hemorrhage, but it was distinctly more than is present in a normal case and the placenta was not felt until the patient was two-thirds dilated. The patient was found in active labor and as the bleeding was not excessive and both the fetal and maternal pulse showed no alteration, there was no indication to do anything but watch the patient carefully. The head came down and stopped the bleeding. As the head passed the placenta, more bleeding followed because the pressure of the neck was insufficient to check it. Care must be taken in these cases that no internal concealed hemorrhage takes place. This can be determined by careful watching of the fetal heart and maternal pulse. With bleeding such as this case showed, one must be ready to interfere at a moment's notice. If the cervix does not dilate and a lateral prævia which is bleeding is present, a large-sized dilating bag may be put in through the os uteri and the membranes and then dilated. The pressure of the bag on the placenta will check the bleeding and accomplish dilatation of the cervix. The moment the bag comes through the cervix, the possibility of an hemorrhage between the presenting part and the bag must be remembered. If the presenting part be a breech, delivery had much better be undertaken at once, for the soft breech does not tend to check the bleeding as well as the firmer head, and further a breech labor may be slower and the opportunity for hemorrhage greater.

In Case 40 I attempted to put the bag directly through the central prævia into the amniotic sac and hoped that the pressure it exerted on the placenta would stop the bleeding and at the same time soften the cervix which was unusually tight for a cervix in a placenta prævia. I failed to place the bag in the amniotic cavity but I did not know this until I came to operate later. There is said to be less danger of sepsis

if the bag is placed within the amniotic cavity and the danger from hemorrhage is unquestionably less. With a soft multiparous cervix a bag will not, many times, be called for but where there is a rigid cervix in a primipara, its use must be considered.

In the latter condition, which fortunately is rare, a Cæsarean section is not contra-indicated. I am not in favor of a Cæsarean section in placenta prævia as a routine treatment, but in certain types of cases it is without doubt the best treatment. Case 40 more nearly approached this type of case than any I have yet seen. This patient was a primigravida with a complete prævia and a rigid cervix. The baby was large and at full term and apparently in good condition. These conditions must be fulfilled in my opinion if one is to do a Cæsarean section. Besides these conditions the patient must not be infected. Of this condition we were not certain, but the probability of infection from a vaginal pack in place some hours was great and I therefore decided against a Cæsarean section.

A vaginal gauze pack properly introduced will soften up the cervix and if labor is beginning oftentimes hurry it, but such a one as was put in in Case 40 is of no service. This one consisted simply of a piece of gauze not more than a foot long by two inches wide. If a pack is to be introduced it should be done with sufficient amount of gauze to fill snugly the vagina. The end should be pushed in through the external os and the cervix firmly packed and then the culs-de-sac. I seldom use a vaginal pack and should elect to use it only in a case where the hemorrhage is so profuse that it must be checked. Otherwise the patient's life might be sacrificed before preparations for operation can be completed. The danger of a concealed hemorrhage when a vaginal pack is in position must be kept in mind and the patient's pulse watched every few minutes.

If the child in a placenta prævia is a small puny thing then a Braxton Hicks' version and extraction is the best method to use in delivery. The shock of such a delivery is very slight but in doing it one must remember that constant traction must be kept on the seized foot and leg and that no

internal concealed hemorrhage can be permitted to take place. This is prevented by keeping careful watch on the patient's pulse, the feel and size of the uterus by constant efficient fundal pressure, and by the steady traction that the operator exerts on the baby's leg. By this method the baby is deliberately sacrificed but this is very much better than for a bungling operator to extract rapidly a premature baby which dies in a few moments and then to have the mother die because of a ruptured uterus.

In the majority of prævias I believe manual dilatation will be the method of delivery elected. Instrumental dilatation has no place in such conditions. Whether the manual dilatation is done according to Edgar's method or by the Harris method will depend upon the individual operator. Both methods have given me equally good results. If the bleeding is profuse by the Harris method at the beginning of dilatation, one can change to Edgar's bi-manual method oftentimes to advantage, for by this method sometimes the placenta is not disturbed as much. In the dilatation the operator must remember that the integrity of the cervical ring is the essential point in the operation. Speed in dilatation is of a secondary importance. Where speed in delivery is considered and the safety of cervical ring is not, rupture of the uterus is sure to follow. A tiring out of the os uteri must be obtained; divulsion is not wanted. After complete dilatation is obtained, version is the operation of election. In going up into the uterus to seize a foot, if the placenta is in the center of the os uteri, go directly through the placenta and never bring out the hand which is in the uterus until the foot sought is found. The arm against the placenta stops the hemorrhage and until you are ready to substitute the baby's leg for your arm never bring down your arm. If the placenta is found on one side more than the other, push it to the side where its greatest bulk lies. (Case 38.) Do not in this case go through it but enter the amniotic sac through some part of the membranes.

Unless there is bleeding there is no indication to hurry the delivery of the placenta. If there is bleeding the placenta must be expressed or removed manually. If the latter,

scrupulous aseptic technique must be followed. A fresh pair of sterile gloves should be put on and before the vagina is entered, the introitus and vagina should be thoroughly wiped off with 70% alcohol. Seek the line of cleavage between the placenta and the uterine wall. At times this line is very easy to develop; again it is difficult and the operation of manually removing the placenta becomes a serious procedure. The whole placenta should be freed before any attempt to withdraw it is made. Hemorrhage after the removal of the placenta may be tremendous and the means to meet this must be at hand (page 233).

Properly managed cases of placenta prævia give a mortality of from three to five per cent. Hospital statistics however show a much greater mortality because of the poor, sometimes moribund, condition of patients sent in. The danger from a placenta prævia comes from the hemorrhage which inevitably must take place. Added to this is the increased risk of sepsis because of the fact that the uterine sinuses where the placenta has been attached are so close to the os uteri. Because of the hemorrhage the patient's ability to withstand infection may be lowered and after having been successfully delivered she may later die from sepsis.

One hemorrhage before labor may be sufficient to kill the patient; fortunately this is a very unusual happening. Even after the patient is delivered the patient may die from uncontrollable bleeding plus the shock of delivery. The shock of even an easy delivery to a patient already weakened by hemorrhage may be sufficient to kill her. Not a few patients die from a rupture of the uterus due to too rapid dilatation — a dilatation which in reality is a divulsion. A quick delivery with a rupture of the uterus is a severe arraignment of the operator.

The prognosis for the child is bad, for even in the hands of skillful operators the mortality is from thirty to fifty per cent. Fortunately the babies in these cases of placenta prævia lived. Had the baby in Case 40 been lost I should have held myself to blame for waiting too long. In the other two cases I gave very guarded prognoses for the

babies' lives. The reasons for this high mortality is the fact that the babies usually are premature, the loss of blood is great and the asphyxia which occurs in the delivery is many times very deep. Many babies die in a few days after a successful delivery from an aspiration pneumonia.

I recognize fully a child's right to live, and I firmly believe that if the child is at full term and in good condition when the physician starts to operate that it is justifiable to subject the woman to slightly added risk for the child's sake. I do not believe however that it is right to subject the woman to any added risk if the child is premature and in poor condition.

SECTION XI.

CONTRACTED PELVIS.

Case 41. CONTRACTED PELVIS. INTERMEDIATE FORCEPS. Patient is seen for the first time September 23. Her last period was May 9th. Her next period was due June 6th but she had no show on that day. On the 8th of June for a few hours she had a very slight staining. No period in July, August or September. If we reckon from her May period, delivery will be due about the 19th of February, but she is quite confident that that would be too early and that pregnancy could not have begun until at least ten days later bringing labor to the very end of February or the first of March. She was operated on two years ago for a hernia in the scar following a drained appendectomy. Except for these operations she has been in excellent condition all her life and never had a serious illness. Has now no nausea or vomiting. Is eating and sleeping well. She is constipated and every other night she is taking compound licorice powder. I went over with her the various points in her pregnancy and advised her about her general hygiene, exercise and the drinking of water. Patient is a small, slight woman. Measurements of the pelvis show crests 23 cm. spines 22 cm., external conjugate 17 cm.

December 16. Vaginal examination: — The promontory can just be reached without ether. Contour of the pelvis is normal. Ischial spines are prominent. Symphysis is normal and the angle of the pubic arch is slightly contracted. Bis-ischial diameter is 9.5 cm.

February 17. Palpation shows a small baby at the present time lying in O. L. A. position. Head is at the brim, freely movable, but no overriding of the occiput at the symphysis is present. Fetal heart is 132 to the minute in the left lower quadrant. Vaginal examination: — With pressure above, the head can be sunk slightly into the pelvis. There is no real

overriding at the symphysis. Promontory can be readily reached. The patient remarked that the baby is pushing out in front and is not getting lower.

February 22. I saw her again because of the slight tendency of the uterus to become pendulous. I took out an assistant to-day intending to etherize her and determine absolutely the size of the pelvis. On making a vaginal examination I found that the head had come down so that it could be readily reached. Then seizing the head with the thumb and index finger of the right hand above the symphysis and pushing downward, two fingers of the left hand being in the vagina it is seen that the head can be pushed down into the pelvis. The bones of the head are soft. The patient is a small-boned woman and the baby at the present time does not weigh over seven pounds. I determined then to give her the test of labor with the reservation that it may be necessary to do a Cæsarean section after she has had a fair test.

February 28. The husband telephoned at quarter past four this morning saying his wife was having pains every five minutes and that they had begun very slightly just after midnight. Arrived at the house at shortly after five, and she soon after had one pain. From then until seven o'clock she had no more pains. Vaginal examination at that time showed that with this slight amount of labor she had pushed the head down distinctly further than at the examination a week ago but the biparietal diameter is not yet through the brim. The cervix is partially taken up. The external os admits one finger.

At this time the husband asked if everything was all right, whether she would be liable to have a hard time or not. I told him frankly that the probability was that if she went into good labor she would push the head down so that a simple low forceps delivery could be done; that she was slight and small, and that the baby I thought was small also. I advised against a Cæsarean section and told him that if he wanted a consultation I would send at once for a consultant, but I felt very confident that with good labor the head would come down and a relatively easy delivery would follow. He

accepted my advice. Fetal heart at this time was in the left lower quadrant, 138 to the minute. As she was not in labor I left the patient. I saw her again at seven in the evening. From seven o'clock in the morning until now she was scarcely in labor for she had only once an hour a pain which when it came did not bother her in the slightest. Her pulse remained at 80. Membranes were not ruptured and she had slept for two hours during the afternoon. She was in excellent condition and there was absolutely no indication to do anything and I therefore left the patient.

At eight o'clock she began having pains every five minutes. I went again to her at ten and found pains coming every five to six minutes and lasting from thirty seconds to one minute. Palpation of the head showed it to be firmly fixed at the inlet. From ten until one o'clock in the morning of March first, she had excellent pains. Fetal heart remained 138 in the left lower quadrant and pains were coming every five minutes lasting now steadily a minute. Her pulse was 90. Vaginal examination at one o'clock showed the os dilated one inch. The cervix was soft and it readily stretched up to nearly two inches. There was present an excellent bag of forewaters. Head was engaging but the biparietal diameter was not through the brim. Pains steadily increased in severity with intervals of three minutes and lasted one and half minutes. Uterus relaxed well between pains with no tenderness on palpation. At 5 A.M. palpation of the head from above gave the impression that the biparietal was through the brim. Uterus was then found to be tender in the left lower segment and there was also a full bladder. Patient voided ten ounces of urine and the tenderness very soon disappeared.

At 6 A.M. vaginal examination showed the os uteri half dilated and very much thinner than at the previous examination. With very slight stretching I dilated the os to two-thirds. At 6:30 obstetrical ether was begun. At 6:55 the membranes ruptured. Fetal heart immediately listened to and was found to be 138 to the minute. Palpation of the head from above showed it to be well down into the pelvis. At 7:15 she began to bear down with each pain. Obstetrical

ether gave her great relief and she worked splendidly with each pain until half past nine. Pulse now was 110. Her pains were of less force and she now did not work well. I therefore determined to deliver her.

She was etherized and perineum was carefully dilated. Patient was catheterized but no urine obtained. Head was found held up at the ischial spines, occiput fully rotated to the arch. Anterior lip of the cervix was caught down between the head and the symphysis; the posterior lip could not be felt. Forceps blades were applied to the head without any difficulty. With slight traction to hold the head steady I pushed up the anterior lip of the cervix. A slow careful extraction was then done. Circulation of the scalp as the head came to the perineum was satisfactory. The delivery was not difficult. Baby when delivered was markedly etherized and was slow in crying. He was put into hot water and at once began to breathe regularly; gradually came out of ether and soon cried lustily. The uterus acted well. There was a slight median tear of the perineum which was repaired with two silkworm-gut sutures. The baby weighed 7 pounds 6 ounces. I left the patient at 12 o'clock in excellent condition with pulse of 100.

The baby acted well except that it had a great deal of mucus which necessitated constant watching. The first day the baby cried much and as there was no milk in the breasts it was put on to a modified milk of fat 2%, sugar 6%, proteid 0.75%, no heat and no lime water, one-half ounce every two hours. Patient was unable to void urine twelve hours after delivery and so was raised up by her husband and the nurse on the bed pan and she then readily voided. On the morning of the third day the milk came in with a rush and the breasts became very full and hard. The nipples were slightly depressed and the baby had more or less trouble getting hold of them. By the use of the nipple shield baby obtained plenty of milk and was satisfied. The morning of the fifth day patient's temperature was 99° and pulse 80. Evening temperature remained at 99° and pulse 72. Lochia normal. Perineum looks well and there is no tenderness. By the eighth day the baby had pulled out the nipples enough with

the use of the nipple shield so that he could be put directly onto the nipple. On the tenth day the stitches were removed and apparently a good result obtained. On the twelfth day temperature normal. Uterus cannot be felt above the symphysis and there is no tenderness anywhere. She got up at the end of the eighteenth day and has done uniformly well. In the fifth week vaginal examination showed excellent result on the perineum. Slight bilateral tear of the cervix. Uterus normal in size and position. Nothing felt on the sides. Pelvic walls normal. Baby is nursing and doing well.

Case 42. CONTRACTED PELVIS. ELDERLY PRIMIGRAVIDA. HIGH FORCEPS. Patient is seen for the first time September 7th. She is seven months along in her first pregnancy. She has been married but one year. Last menstruation came on January 29th of last year and therefore delivery is due about November 8th. She is in excellent physical condition. She has never been sick. She is 42 years of age. There is nothing of interest to note in her pregnancy.

October 20. Measurements of her pelvis gave the following: Crests 27.5 cm., spines 24.5 cm., external conjugate 19 cm. Palpation of the abdomen very unsatisfactory as the patient could not relax. Could not palpate any presenting part in the pelvis. Vaginal examination shows very tight, rigid perineum. Cervix soft and partially taken up. No dilatation. Presenting part cannot be reached. Ischial spines are readily palpable. Promontory cannot be reached. Inclination of the pelvis normal, the pubic arch is slightly narrow. My closed fist can with difficulty be pushed between the ischial tuberosities.

October 25. The husband comes in to see me. He says he is very anxious about the baby and does not want to run any risk of losing it at the delivery. I went over the whole situation with him and told him the surest way to obtain a living baby was to have a Cæsarean section. This he absolutely refused and also he says his wife would refuse it. I did not urge at this time a Cæsarean very strongly because of the fact that the pelvis was in my opinion a border line one.

November 1. Palpation very unsatisfactory. Probability is that the position is a left one. Head is movable at the brim of the pelvis. Vaginal examination: — Presenting part is readily reached and with pressure from above on the vertex it can be pushed down into the pelvis a slight distance. There is no overriding of the occiput at the symphysis. The promontory is not reached. The ischial spines are very prominent. As noted before, the outlet is contracted slightly.

November 2. The husband comes to the office to-day. I strongly advised a Cæsarean section for the following reasons: The patient's age, 42 years, the rigid soft parts,

the contracted outlet. I told him frankly the baby might be lost and without doubt his wife would be badly lacerated. He absolutely refused to allow it and I then talked the whole situation over the next day with the patient. She also refused, being one of those unfortunate individuals who thought it to be her duty to suffer the trials of childbirth. She further refused an ether examination in order to determine absolutely the relation of the head to the pelvis. With a clear understanding of the risks she was taking for herself and for the baby we determined to let her go on and await labor.

November 15. Pains started at 4 A.M. at intervals of one-half hour. At 7 o'clock the husband telephoned that his wife was not having any pains at all. At 9 o'clock pains began coming with more severity, every twenty minutes. Palpation at 10:30 A.M. showed the head at the brim. No overriding. Position O. L. A. The baby weighs about seven pounds. Fetal heart is best heard in the left lower quadrant, 130 to the minute. Vaginal examination showed the cervix taken up and os dilated about one inch. Temperature 98.6°, pulse 70. She was sent at once to the hospital where she was to be confined. She got to the hospital about 12:30 and then was having pains every ten minutes lasting one-half a minute. She was in fair labor. There was no show. Fetal heart remained regular at 130. Question if the membranes did not rupture just before she started from her home but no liquor now is draining away. During the afternoon she had pains only every fifteen minutes, not severe, lasting but thirty to forty-five seconds. Uterus was relaxing well between pains. Patient's pulse had risen to 80. At nine o'clock pains began coming every three minutes lasting from one to one and a half minutes. Uterus contracted very hard but relaxed well between pains. Pulse now 96. Vaginal examination at ten showed that the head was still high. Biparietal not through the brim. Definite caput was forming, making it certain that the membranes had ruptured. Dilatation of the os was three inches and the cervix was thin. Fetal heart now listened to every half hour and was found to be regular. Palpation of the uterus

showed that it was not relaxing well between pains and the lower uterine segment was slightly tender. There was evidence of a full bladder, and she voided at once without difficulty. Up to now she absolutely refused all ether. Both she and her husband refused to let me operate. At twelve I told the husband that unless he would let me do what I thought best he would have to get another physician at once. Her pulse was now 120 and temperature 99°. Fetal heart 150 and regular. Uterus was beginning to be in a tonic condition and the tenderness in the lower segment was increasing. She now consented to an operative delivery. The usual preparations were quickly completed and she was etherized and put in the lithotomy position, the legs held by nurses. Examination showed the os fully dilatable. Head high in O. L. A. position. Large caput present. Head had not descended in the slightest. In dilating up the perineum which was very rigid, I tore the skin to the sphincter. The head was unrotated. In determining the position accurately masses of meconium came away and a definite contraction ring was felt. High forceps were applied to an O. L. A. position. At the first attempt at application, the forceps did not lock well. I applied them a second time, and then obtained an excellent application. Fetal heart heard by the etherizer, not counted but very rapid. With the first tentative traction the head came down a little into the brim. Intermittent traction then brought the head to the spines without a great deal of difficulty. Here there was marked resistance. With much traction the head came further down and distended the soft parts. The soft parts did not stretch, but tore badly. Baby was finally delivered deeply asphyxiated. Cord was pulsating feebly. After some time the baby began to breathe regularly and it then cried faintly. Perineum was torn to the sphincter with a deep internal tear on the patient's right extending downwards and inwards to the spine of the ischium. There was another tear along the right descending ramus which was not as severe. The patient's pulse was now 130 and of fair quality. A strip of sterile gauze soaked in 70% alcohol was packed into the vagina giving an excellent view of the perineum. The tear was repaired by

interrupted chromic catgut stitches, some buried and others tied in the vaginal mucous membrane. The external tear extended to the sphincter but in no way involved it. Three silkworm-gut sutures placed on the outside brought the perineum into excellent approximation. Placenta was then delivered intact with all the membranes. The silkworm-gut sutures were now tied. Uterus acted well and there was no bleeding. She was then put back to bed and immediately upon being turned about she went to pieces. Pulse could not be counted at the wrist. Color was bad. There was no bleeding. The uterus remained hard.

It was evident that the patient was in profound shock after a hard labor and a hard operative delivery. She was given morphia one-sixth subcutaneously at once followed by one-twentieth of strychnia. The foot of the bed was raised and she was surrounded by heaters. Pulse at once could be felt at the wrist but of very poor volume. She became restless. There was no sign of any bleeding. Morphia gr. 1/6 was repeated. At 2 A.M. her pulse was 120 and of very poor volume. She was nauseated and vomited three times before three A.M. Each time her pulse went to pieces but quickly recovered. Her color slowly improved; her legs and feet were warm. Gradually the pulse came down and improved in quality and at 5:30 it was 110 and volume very markedly improved. Her color now was fair and all nausea was gone. The baby except for a bruised right eye and ear is in excellent condition. The large caput succadeneum gives the impression of a long moulded head.

November 16. Steady improvement, pulse 116, temperature 98.6°. Twelve hours after delivery she had not voided urine. There is no distension of the bladder and she has no inclination to void. She was perfectly comfortable without any distension at the evening visit and I decided not to catheterize her.

November 17. This morning at two A.M. she voided six ounces of urine. At nine o'clock examination of the abdomen showed two tumors. The one on the left resilient and not tender and the one on the right hard and slightly tender. Both dull on percussion. She was catheterized and thirty-

eight ounces of urine obtained. Pulse is 90. Temperature normal. The patient is in very good condition and very much more comfortable than yesterday.

November 18. Is able to lie on her side. Has voided several times voluntarily. Stitches look well. Slight amount of edema. Lochia normal and profuse. Fundus well contracted. Not tender. Baby is doing well. On the second day a large cephalhematoma developed on right parietal bone posteriorly. Patient is in first-rate condition.

November 19. Temperature normal, pulse 78. Except for the hemorrhoids which appeared two days ago she is very comfortable. No sign of milk in the breasts. Patient is slightly distended. Bowels have not yet moved because of the severe tear. Baby is slightly jaundiced. Cephalhematoma has not increased in size since yesterday. For the hemorrhoids a flaxseed poultice was ordered every two hours.

November 20. Temperature 99.6°, pulse 80. Is complaining about the stitches and the hemorrhoids. Milk came in to-day. Breasts are full and uncomfortable. Temperature at noon to-day 101°. Pulse 88. Abdomen is negative. Uterus not tender. Involuting well. Lochia is profuse. Normal in color and odor. The ring of hemorrhoids is marked. There is considerable tenderness near the right ischial tuberosity with ecchymoses just below the tuberosity. The flaxseed poultices have given her much relief.

November 22. Temperature dropped to normal this morning. Pulse is ranging from 75 to 90. The patient looks well. Is very much more comfortable than at any time previously. She complains, however, of severe pain at the hips and is unable to turn on either side. Pain about the right ischial tuberosity is very much less. Bowels were opened on the sixth day by a four-ounce oil enema carried over the fifth night. Half an ounce of castor oil was given early in the following morning followed three hours later by a glycerine enema. Abdomen is negative. Uterus is involuting well. There is no tenderness anywhere. The baby apparently nurses well and is satisfied and after nursing sleeps until the next feeding. This morning the nurse reported that the baby had lost five ounces since yesterday.

I questioned the accuracy of the weighing and asked that the baby be weighed before and after each feeding. After the second weighing it was reported that the baby showed no gain in weight and was crying after the nursing. Modified milk of the following formula, 2% fat, 6.5% sugar, 1% proteid, no heat and no lime water, was at once obtained for it. The baby was given an ounce every two hours besides nursing for ten minutes. It was at once seen that the mother had not a sufficient amount of milk in the breasts and a supplemental feeding at least must be given. Jaundice has cleared up. Cephalhematoma is no larger.

November 27. Stitches removed to-day. External result good. Given sterile water vaginal douche to-day because at this time lochia had a slightly stale odor. Temperature which had been running up to 100° at night dropped at once to 99°. There now is no milk in the breasts and the baby is entirely on modified milk and is doing well.

Examined on the 24th day. Perineal body has healed well. Internal tear on her right almost healed and the result is excellent. Uterus normal in size and position. Cervix shows bilateral tear. Breasts are flabby and no milk can be expressed. Baby is steadily gaining on modified milk. Umbilicus is healed solidly and there is no bulging. Cephalhematoma is still large but is slowly decreasing in size. Patient is discharged to her local physician.

Case 43. CONTRACTED PELVIS. POSTERIOR PARIETAL PRESENTATION. A telephone message from my house officer at half-past three in the afternoon of August 13th states that he had just seen a primipara with small pelvic measurements, that the head which was presenting was high, that the membranes were ruptured, that she was in good active labor now, but that there was no advance of the presenting part. I went to the patient at once and found her, a Polander, in active labor, pains coming every three minutes lasting one minute. Between pains the uterus was soft and not tender. Palpation showed the firm, smooth resistance of the back on the left and fetal small parts readily felt on the right. The head is firmly engaged in the inlet and cannot be moved. By the fourth manœuvre the head can be pressed but little further in the pelvis. There is no overriding of the head at the symphysis. Fetal heart is heard in the left lower quadrant, 120 to the minute and regular. Pelvic measurements are crests 26.5 cm., spines 23 cm., external conjugate 17.5 cm. The baby is small, not over six and one-half pounds.

VAGINAL EXAMINATION: — Soft perineum, os uteri is fully dilatable but the edge of the cervix is thick. Sagittal suture is readily felt in the transverse diameter of the pelvis, but is very much nearer the symphysis than the promontory. The contour of the posterior parietal bone is readily felt curving forward from the promontory. There is marked overriding of the posterior over the anterior parietal bone and very little of this latter bone is felt. The anterior fontanelle is not reached nor is the posterior definitely made out. With two fingers in the vagina and the thumb swung up over the symphysis, pressure downwards with the right hand on the head gives no overriding at the symphysis. The ischial spines are readily palpated. The pubic arch from palpation seems to be slightly narrowed but the bis-ischial diameter with Williams' pelvimeter is 10 cm. The closed fist can be pushed between the tuberosities. No liquor is coming away.

The patient's pulse is 76 and she is in excellent condition as is the baby. I told my house officer I saw no indication to interfere, that with the complete dilatation of the cervix

and the continued moulding of the head which it was so evident was taking place I thought she would deliver herself, that it was clear we had a posterior parietal presentation and as soon as the parietal bone moulded over the promontory the remainder of the delivery would be normal. I left the patient at five P.M. with the request that if she is not delivered by nine o'clock to let me know and to notify me at once should any untoward symptoms arise.

Telephone message from the house officer at nine says that he had just examined the patient, that the head was no lower than when he examined her six hours before, that the lower segment of the uterus was slightly tender on palpation, that meconium-stained liquor was coming away. Fetal heart was 130 and the mother's pulse was 80. I got to the patient's house at half-past nine and as I went into the room it was very evident from her actions that she was well in the second stage of labor. The externe was just putting the patient in the left lateral position and as a pain came the anus was seen to bulge. On asking him how long that had been happening he said it was the first time. From the time the house officer left to telephone to me, to now, was not more than three-quarters of an hour and fifteen minutes later the baby was born. The baby was seen to be pale, without any muscular tone and the umbilical cord was collapsed. The externe was told to clamp and cut the cord at once and I took the baby to resuscitate it. (See page 478.) In the course of a few minutes it began to cry lustily and seemed to be in normal condition. There was marked overriding of the parietal bones twenty minutes after birth and over the occiput was a very large caput succedaneum. The baby weighed six pounds.

Examination of the perineum by the house officer showed no tear to be present. The placenta came away intact a short while later and there was no bleeding. When I left the house both the baby and mother were in excellent condition.

I was later told that the patient had a normal convalescence and both she and the baby were discharged on the tenth day.

Case 44. CONTRACTED PELVIS. HIGH FORCEPS. My house officer reports the following case at eight P.M., August the fourteenth. A primipara, 19 years old, had just entered the hospital in labor, with pelvic measurements of crests 24 cm., spines 18 cm., external conjugate 17 cm. I saw her at once because of these small measurements. She says she has had slight pains since five o'clock this morning, that no waters have come away, and that at no time have the pains come oftener than fifteen-minute intervals. Her pulse is 72, temperature 98.6°.

I confirmed the pelvic measurements as reported by the house officer. Palpation shows vertex presentation, position right anterior. Head is freely movable at the brim of the pelvis, but by the fourth manœuvre can be sunk into the pelvis. Estimated weight of the baby seven pounds. Fetal heart is best heard in the right lower quadrant, 168 to the minute.

Vaginal examination shows a high, floating head. Cervix is taken up. Os is dilated one finger. With pressure from above on the head it was seen that the head can be sunk into the pelvis. There is no overriding at the symphysis. The head seems soft and will probably mould. The pelvic outlet is normal. She is a slight, frail girl with small bones.

I decided to let her go into labor. From 9 o'clock, August 14th, until five in the morning of the 15th she had hard pains every three minutes; examination then showed that the os is no more dilated. I told the house officer to put in at once a large-sized Voorhees bag. Four hours after the bag was put in it was pushed out and when it came out it was evident the membranes had ruptured. Examination then showed that the os was two-thirds dilated and fully dilatable. The patient was having slight contractions every three minutes but had not moulded the head down into the pelvis. The biparietal diameter was not through the brim. She had been in the hospital fifteen hours and had had twelve hours of hard labor, but had accomplished very little. I therefore decided to deliver her. Preparations for an operative delivery now completed.

Position was O. D. P. The usual technique in dilating the

perineum and cervix. With the left hand in the vagina the head was rotated to an O. D. A. and the right blade of the forceps was applied first without difficulty. The left blade was then applied necessitating the rotation of this handle about the first handle. The blades then locked readily. The fetal heart was heard by the etherizer. Tentative traction showed that the forceps did not slip and that the head descended slightly. With gradual intermittent traction the head was brought to the perineum and the occiput fully rotated to the arch. Pressure on the scalp as the head came into view showed the circulation to be excellent. Slowly the perineum was fully dilated and the head then delivered. There was no difficulty in the delivery of the shoulders or with the body. The baby was slightly asphyxiated but soon cried. Examination of the perineum showed that there was no external tear but a slight internal tear was present. This was immediately repaired with one chromic catgut suture. On the fifth contraction the placenta was delivered intact with all the membranes. An intra-uterine douche of salt solution, followed by a pint of 70% alcohol was given. Patient was in excellent condition and made a good recovery from ether. The uterus acted well.

The baby weighed 7 pounds 4 ounces. On the fourth day when it was weighed it had dropped to 6 pounds 5 ounces and was very much jaundiced. On the fifth day there was found a small hematoma just under the angle of the left jaw where the tip of the forceps had come. The jaundice of the baby gradually cleared up without treatment, and by the seventh day the hematoma had entirely cleared up.

On the thirteenth day after delivery the patient was examined. The uterus was found well involuted, normal in position, freely movable and no tenderness in the pelvis. There is a stellate tear of moderate degree in the cervix. The tear of the perineum is well healed. There is considerable leucorrheal discharge. She is up and about the ward in good condition and was discharged well. The baby is gaining.

Case 45. CONTRACTED PELVIS. CÆSAREAN SECTION. Patient has been under observation for the past three weeks because of the fact that she has small pelvic measurements and a fair-sized baby. She is 22 years of age, and is nearly at term in her first pregnancy. The measurements are as follows: Crests 25 cm., spines 22 cm., external conjugate 17.5 cm., bis-ischial diameter 9 to 9.5 cm.

August 6. Vaginal examination showed that the promontory could just be reached. The arch is slightly narrowed. The patient was etherized and the head could not be pushed down into the pelvic brim, and there was marked overriding at the symphysis. Cæsarean section was advised. She did not accept the advice but went out of the hospital to consult friends.

She entered the hospital August 10th having hard uterine contractions. She says she has had these for three hours. Palpation of the head shows that it is not entering the brim at all, is freely movable and is overriding the symphysis. I again advised a Cæsarean at once if she wished to obtain a living baby. She accepted the advice and was at once prepared for operation. Abdomen was shaved, scrubbed with soap and water thoroughly and then with alcohol 70%.

Operation. Ether anesthesia. Ether was started only after the preparations were complete and the patient was on the operating table. A median laparotomy incision was made five inches long to the left of the umbilicus, two inches above and three inches below. Ergot was given intramuscularly as the incision was made. Uterus was found free and no adhesions present. A walling-off gauze was placed on both sides of the uterus, above and below. Longitudinal incision then made into the uterus. Placenta was found under the incision. Incision of the uterus was enlarged slightly upwards and downwards. The placenta was torn through. Ergot now repeated. The baby, in vertex presentation, was immediately delivered and cried at once. The cord was clamped and cut. The placenta was removed and the uterine cavity wiped out with sterile gauze, care being taken to remove all the membranes. The uterine incision was now closed by two rows of interrupted catgut sutures,

care being taken not to include the endometrium in the deep stitches which were of No. 2 chromic catgut. Superficial sutures were of chromic catgut No. 1. The sponge count was correct. The abdomen was closed by No. 1 plain catgut to the peritoneum; No. 2 chromic catgut to the fascia with interrupted sutures. Interrupted silkworm-gut sutures to the skin. Patient went off the table with a pulse of 120 in excellent condition. She made a good ether recovery and there was only a normal amount of bleeding present. The baby weighed 7 pounds and 15 ounces.

Her temperature the night of delivery was 101°, pulse 120. On the first day she had a temperature of 101.4°; pulse 110. She was slightly distended, but on the whole was very comfortable.

Patient's bowels moved on the afternoon of the first day by enema. From then on she made an excellent convalescence. Her temperature both morning and evening of the second day was 99°; pulse dropped to 90. From then on she ran an absolutely normal temperature and pulse. The stitches were taken out the eighth day and a first intention wound obtained.

On the twelfth day she sat up with a head rest, and on the fourteenth day she was out of bed. Except for a very small granulating area in the middle of the scar the wound is solid with no bulging. She is nursing her baby and it is doing well.

She was discharged on the twenty-first day, both she and the baby in good condition.

Case 46. CÆSAREAN SECTION BECAUSE OF PAST OPERATIVE OBSTETRIC HISTORY. Patient presents herself at the hospital with the story that she has lost three children in two previous pregnancies. The first baby was lost after a long labor followed by an instrumental delivery. The second followed within the year and twins were lost. The babies at each of these deliveries were not weighed. She was looked after out of town and the time was so short before delivery was due that it was impossible to look up the physician who attended her. Her last period was on the 14th of November and she is due for delivery from the 21st to 24th of August. She is a short thick-set Jewess with a large pendulous abdomen. She comes to the hospital with her husband and they both say they are anxious for a living child and want to have a Cæsarean section done. The external measurements are crests 28 cm., spines 19.5 cm., external conjugate 18.5 cm. The arch is narrow and of the male type. Palpation shows a good-sized baby about eight pounds. Vertex presenting. Occiput left anterior. Fetal heart 120 to the minute in the left lower quadrant. It is with difficulty that the closed fist can be put between the ischia. The promontory can be reached without ether.

I decided to do a Cæsarean section on August 21st and she was told to come into the hospital on the 19th for preparation. She entered the hospital as requested and was given a large amount of water to drink, bowels thoroughly cleared out with castor oil and enema. On the morning of August 21st under ether anesthesia an incision one and one-half inches to the right of the median line, extending from just below the ribs to just above the umbilicus was made. Peritoneal cavity opened without incident. The uterus was found free with no adhesions. A walling off gauze of one long strip was then packed about the uterus, above and below and on both sides of the incision. The uterus was incised in the median line and the incision was enlarged slightly by tearing upward and downward. The placenta was found immediately beneath the incision. Placenta torn through, membranes ruptured, and the baby extracted by the breech. The cord was clamped and cut and the baby handed to an assistant

and as it was taken out of the operating room it cried. The upper and lower ends of the uterine incision were caught by vulsellum forceps and the uterus brought up into the incision. Placenta was delivered, the membranes peeled off and the cavity wiped out with gauze. There was a slight amount of bleeding. The uterine wound was sewed up with six deep No. 2 chromic catgut sutures. Superficial sutures were of No. 1 catgut. Gauze packing was removed and the uterus dropped back into the peritoneal cavity. Abdominal wall closed by No. 1 plain catgut to the peritoneum, and No. 2 chromic catgut used in interrupted sutures to the fascia, skin closed with interrupted silkworm-gut sutures. Dry sterile gauze dressing put over the wound and held in place by two adhesive plaster straps. Tight scultetus bandage applied below the incision. Sterile vulval pad applied. Normal amount of flowing was present. Patient went off the table in excellent condition but with a pulse of 130. She made a good ether recovery, vomiting but a few times. Pulse steadily came down in rate and late in the afternoon was 92 and her temperature was normal. The baby weighed eight pounds and four ounces. The distension in the late afternoon and early evening was marked. Calomel gr. 1/6 for eight doses at half-hour intervals was started in the early evening and a high glycerine enema was given her with an excellent gas result and some feces.

August 22. Half a seidlitz powder was given early this morning followed two hours later by a suds enema. Excellent results were obtained. At the morning visit she was in excellent condition, abdomen soft and not tender. Pulse 98, temperature normal. Patient has voided. Lochia is normal in amount and character. There is colostrum in the breasts and the baby is to be put on to-day every four hours.

August 31. Patient has made a normal convalescence. Abdominal stitches were removed on the eighth day and the wound is solid. On August 23 the baby weighed seven and a half pounds and from then on it gained steadily.

September 9. Patient sat up in bed with a head rest on the sixteenth day and was out of bed the next day. She gradually got up about the ward and went home on the twenty-first day after operation.

Case 47. CONTRACTED PELVIS. CRANIOTOMY. Patient is seen for the first time about eleven P.M., August 16th, in response to a telephone message from my house officer saying he had just seen a rachitic dwarf who was in active labor. Her measurements as he made them out were intercristal 25 cm., interspinous 22 cm., external conjugate 17 cm. He said she was fully dilated, the head was very high and overriding the symphysis. Membranes had ruptured at seven P.M. She had been in labor as far as he could determine at least twenty-four hours.

When I saw her she was in active second-stage labor, pains coming every two minutes lasting a minute and a half. Uterus was relaxing well between the pains. Head is overriding the symphysis and freely movable. From a very hurried inspection, the patient's body from the waistline up seemed to be normally developed. Her legs were very short and marked bowing was readily seen. She is said to limp badly on the right leg. Vaginal examination: — Os uteri is fully dilated. Presenting part can just be reached. The promontory is readily felt and the symphysis shows a distinct curve with the convexity towards the sacrum. Definite overriding of the occiput over the symphysis is present.

The patient was an Italian and her husband said it was her first pregnancy and that she had been having pains all the night before and all day, yet they had not sent for an externe until six o'clock this evening. I was unable to find out that a midwife had been in charge of the patient. The patient was begging for ether and I told the husband as clearly as I could that we should have to "take the baby" but it would probably be dead when born. He agreed to what I told him and the preparations which had been started were speedily completed. She was placed on the kitchen table, etherized and then scrubbed up. Catheterized. Perineum thoroughly dilated and the pelvis examined. The closed fist could not be placed between the symphysis and the promontory. With the fingers extended and the thumb drawn into the palm the hand then could be pushed through. The occiput was on the left. The sagittal suture in the transverse diameter. The head did not seem large. I deter-

mined in spite of the ruptured membranes to attempt a version as the cord was felt pulsating. With resistance on the fundus and the left hand in the uterus — no contraction ring was felt — I seized a foot and drew it down. It proved to be the anterior. There was no difficulty in doing the version until I came to the extraction of the head. Traction on the body combined with suprapubic pressure gained nothing. The cord was still pulsating and forceps with some difficulty were put on to the after-coming head but absolutely no progress made. Therefore I determined upon a craniotomy. The destructive set had been boiled up as I felt confident from the house officer's description of the case that it would be needed.

The baby's body was dropped downward towards the floor and my assistant made firm traction on it. The Smellie scissors with the left hand guiding the tips were passed up to the occiput and with a to and fro motion of the right hand the scissors were forced through the lowest portion of the occipital bone just to the right of the middle line. The scissors when through the occipital bone were pushed into the brain substance and turned about several times after they had been opened. They then were brought out at right angles to the way they entered the skull in order to enlarge the hole. A finger of the left hand was held at the opening and the solid blade of the cranioclast was passed within the hole with the button of the lock looking up. The second blade was then passed into the vagina closely hugging the occiput in order to avoid the anterior lip of the cervix. The blades were locked and then the screw-nut tightened. Traction then was made downward and at once much of the brain contents oozed out. The fingers of the left hand were within the vagina so that no piece of the occipital bone might pierce the mother's soft parts. Strong traction made and the head steadily came down through the brim and it was then slowly delivered. The cord was cut and the baby put aside. It was not a large baby, weight by guess not over six and a half pounds. The delivery was completed at 1:50 A.M., August 17th. Patient's pulse was 120 but she was in a perfectly satisfactory condition. The perineum showed

a second-degree median tear. Three silkworm-gut sutures were passed so that the stitches went to the base of the tear. At 2:15 A.M. the placenta came away intact with all its membranes. Ergot was at once given intramuscularly. A two-quart intra-uterine douche of sterile water was then given, followed by a pint of 70% alcohol. Apparently all the douche water returned. The interior of the uterus was not explored. The house officer tied the stitches in the perineum and the patient was then put back to bed. Her pulse steadily dropped and when I left was 100. Uterus was acting well and there was no excessive flow. She made an excellent convalescence; the result on the perineum was only fair. She was discharged from the hospital care on the fourteenth day.

I told the husband after the delivery that if his wife ever again became pregnant she would have to have a Cæsarean section done if they wished a live baby. I carefully explained to him what that meant and the reasons for it, adding that if she did become pregnant to put her at once under our care. All of which he agreed to do.

Within a year one of the district nurses found that this woman was well along in her second pregnancy. She told the nurse that she had gone to a "private doctor" in order to get good care.

She now of course was beyond our reach. The next word I had of her was that her "private doctor" had attempted to deliver her by version, and was unable to extract the head. He was forced to leave the patient — body extracted but the head in the uterus — until he went out of the house and telephoned for a craniotomy set!

Technique of Craniotomy.

A destructive set consists of a perforator and a cranioclast together with the necessary instruments needed for repairing the perineum. The Smellie scissors, which are long, sharp-pointed and strong, are as satisfactory as anything to use as a perforator. Braun's cranioclast has proved very satisfactory in my hands. It consists of two blades, one solid and the other fenestrated, the first fitting

into the second. The blades are held together by a button lock, the button being on the solid blade. The handles are further locked by a screwlock put into position after the blades themselves are placed. The cranioclast which the supply houses carry in stock is sixteen inches long or more, so long that not infrequently there is no container in the house in which it can be boiled. The one I carry is fourteen inches long and has been of sufficient length in all cases where I have used it and will fit into the sterilizer I carry. The cranioclast has but the cephalic curve. Theoretically the outer blade, the fenestrated one, should be placed over the occiput or at least in approximation to the occipital bone in vertex presentations so that when traction is exerted the normal flexion of the head is maintained. If this is remembered, it follows that in right positions the button of the lock looks upward while in left positions the button points downward. If this fact is remembered, flexion which may be so essential is more readily secured.

The technique of a craniotomy is as follows: — The position of the patient, the aseptic technique, catheterization, dilatation of the perineum and of the cervix is as in all operative deliveries. The position of the fetus is then determined, counterpressure is given by an assistant, trained or untrained, on the head through the abdominal wall. This counterpressure is most important for if the head should slip up when perforation is attempted serious maternal lacerations might follow. With firm counterpressure on the head, the operator seizes the scalp with the double hook and pulls strongly downward. If an assistant is at hand he holds this hook as placed. If there is no assistant and good counterpressure is given the use of the hook is not absolutely essential. The closed perforator is passed into the vagina along the gloved fingers of the left hand until the point comes to the lowest part of the occiput which presents. Then by a to and fro motion the perforator is forced through one of the skull bones. The perforator is then opened and moved about in the brain tissue and withdrawn at right angles to its entrance into the skull, thus making a larger hole. The fingers of the left hand are kept at the hole made

by the perforator. The solid blade of the cranioclast is then passed gently into this hole in the skull with the button looking up or down as the case may be as previously explained. The fenestrated blade is then placed over the occiput and the instrument locked. As traction is begun, the maternal soft parts are protected from injury by possible spicules of bones from the fetal skull by the left hand. Steady traction brings the skull into view and the body is then delivered. The advice so commonly given of passing a douche nozzle into the cephalic cavity in order to wash out the brain substance, I purposely have omitted as it is an entirely unnecessary addition to the technique.

In craniotomy on the after-coming head the technique is as already given. The one point to be determined is whether the perforation shall be through the occiput or through the mouth and base of the skull. Two factors determine the answer: which point can be reached the easier, and which point is the less dangerous for the mother. In the above recorded case the occiput was the point most accessible for the perforation, and as there was no prolapse of the anterior vaginal wall, therefore this point was chosen to perforate. Some of the perforators have the sharp points curved on the flat and if one is using this type, care must be taken that the curve when the perforation is made points downwards. If this is remembered the possibility, if the instrument should slip, of doing damage to the maternal soft parts is much lessened. This point of course holds only when the craniotomy is on the after-coming head at the occipital bone. In this latter condition the body is dropped downward toward the floor while if the perforation is to be done through the mouth and base of the skull the body is drawn strongly upwards. In order to get the arms out of the way a sterile towel is passed about the body so as to include the arms as already described in the technique of forceps to the after-coming head (page 245). Whether the operator follows the delivery of the placenta with an intra-uterine douche depends upon his belief in such a procedure or not. It was given here because the technique of the hospital demands it.

A craniotomy means a mistake by some one in the manage-

ment of the case. Careful examination of the patient as already advised will always tell whether a craniotomy will be necessary in order to deliver the patient. Among the ignorant foreigners with whom we have to deal in large hospital clinics, in order to avoid these unpleasant complications we must obtain their entire confidence and there is no way so satisfactory as having well-administered pregnancy clinics.

In neglected cases where the baby is dead, craniotomy is much the preferable operation to a hard forceps delivery or a version and extraction. It is not done as frequently as it should be because of the repulsion the family may feel on seeing the mutilated baby. This, however, is no valid reason for not performing a craniotomy. Craniotomy on a living child is forbidden by the Catholic church and if a non-Catholic physician is operating in a Catholic family some responsible member of the family must be told in the presence of others exactly what a craniotomy consists in. No medical terms should be used, nothing but straightforward plain English. If consent to a craniotomy is not obtained and the physician in charge feels that it must be done, then there is nothing left for him to do but to withdraw from the case, unless he is willing to be dictated to in his management of the case.

Summary of Contracted Pelvis.

The preceding seven cases bring up some of the fundamental problems of managing cases with small pelvic measurements. Grouped, they show how all doubtful cases should be managed. All cases do not call for the same procedure; what is indicated for one is unnecessary for another. In Case 46 I did a Cæsarean section chiefly because of the history the patient gave. This patient had a contracted outlet but even if she had not, she had a right to ask that a Cæsarean section be done in the light of her previous disastrous history.

In Case 41 careful palpation showed that the head was not overriding the symphysis, but at the beginning of labor it was seen that the biparietal diameter was not through the brim. The prognosis here depended much on the type of

labor the patient would have. The type of labor any given patient will have is unknown. Patients of the higher classes do not as a rule stand a hard labor as well as their less fortunate sisters. This unquestionably is a fact but there are many exceptions to the general statement. In this case the labor was excellent and steady progress was made and by this labor she converted what looked to be a hard operative delivery into a relatively easy one.

In contrast to this case is the next one, Case 42, a forty-two year old primigravida. Here the membranes ruptured early. Pains were inefficient and dilatation was slow. When the pains became of good strength the uterus failed to relax well and became tender to palpation. There were signs of a beginning contraction ring. The pulse was rising, further delay in delivering the patient would lead to serious consequences and therefore operation was insisted upon with the recorded results. The risk this patient subjected herself to, because of her unwillingness to have a Cæsarean section was much greater than she could appreciate. Her condition and the baby's at the present time I do not know, for I have lost track of them. Such hard high forceps work is bad obstetrics and the sooner the laity is educated to the point where they will understand that such work is responsible for much chronic invalidism in women and for a large morbidity among the children then will they accept the advice to have a Cæsarean section done. The risk this woman took in being delivered from below was many times greater than the risk of an elective Cæsarean section.

Cases 44 and 45 show well the difference in advice given because of the presence or absence of overriding of the presenting part at the symphysis. At no time was there any doubt in my mind that the first case could be delivered from below without undue danger to mother or child. With an ether examination the latter case showed overriding at the symphysis. This persisted even after a short test of labor, and she then finally consented to a Cæsarean section.

In borderline cases one is justified in allowing the patient to have a few, not more than five or six hours, of good labor

to see whether the head will go into the pelvis. Longer time in labor adds to the risk of an abdominal delivery. In cases where the test of labor is to be applied no vaginal examinations should be made after labor has begun. Descent of the presenting part should be followed by palpation or by rectal examinations. Many Cæsarean sections have been done when the patients have been in labor longer than six hours and the reported results appear to be good. The question at once arises how many have been done late in labor with death following in a few days? These are the cases that physicians unfortunately do not report.

On all doubtful cases, after careful pelvimetry, palpation and vaginal examination, the patient should have the benefit of an examination under ether. A physician owes it to his patient to do this. With the hand in the vagina accurate estimation of the size of the pelvis can be obtained. How far the occiput can be pushed into the pelvis is of great importance in determining whether the patient is to be allowed to go into labor or not. I have advisedly omitted discussion on pelvic malformations and new growths occurring in the pelvis, for if the underlying principles of careful pelvimetry, palpation, and vaginal examination on normal and borderline cases are thoroughly studied, these unusual cases will be easily managed.

In borderline cases the physician can only advise the mode of delivery, the responsibility lies not only with him but the husband and wife must help in making the decision. The risk to the mother and child from a hard operative delivery must be fully explained. That there is a risk in an abdominal delivery must also be told. The risk, however, of an elective Cæsarean is nothing compared with that of a hard operative delivery from below, when disproportion is present.

In recent years pubiotomy has gained a few adherents. The only pelvic condition in which pubiotomy should be an elective operation I believe to be a slightly contracted funnel type of pelvis. In this type of pelvis the pubiotomy wound may so enlarge the pelvic girdle that future deliveries may be accomplished without any operation. In the majority of cases this operation, if done at all, should be

reserved as an operation of necessity. In those cases where a slight disproportion only exists, and which are seen too late in labor to have a Cæsarean section performed, the child must even then be in good condition. It has unquestionably a field but the field is very narrow.

NOTE: — In the technique of performing a Cæsarean section, I used the phrase "incision enlarged by tearing upwards and downwards." It is an unfortunate description of the technique used. The incision through the peritoneal coat into the wall of the uterus is made of the proper length. Then in the middle of the incision the incision is carried down as the case may be, either into the placenta or directly on to the amniotic sac. It is then enlarged downwards and upwards a little way and all but the lower and upper end of the incision is made by the knife through the entire thickness of the uterine wall. Then it has been my habit simply to stretch slightly the lower and upper ends. A wrong idea is given to say there is any tearing of the uterine musculature. In those cases where it is possible, I sew the uterus up with the first layer of sutures buried, interrupted chromic No. 2 catgut. The second layer goes down through the muscular coat of the uterus. The third layer brings the peritoneum over the uterus by a continuous suture over this second layer of sutures. Not in all cases is it possible to sew up the uterus in this way because the uterus is so thin, and in those cases deep sutures are placed down to the endometrium and a second line of interrupted sutures is placed between these deep ones. Then these two lines of sutures are oversewn with a continuous catgut suture, approximating the peritoneal edges. In clean elective cases I do not place any walling-off gauze in the abdomen. The sides of the abdominal wall are held firmly against the uterus so that the greater part of the liquor escapes the abdominal cavity. After the child is delivered and the uterus is drawn up into the incision a sterile towel or gauze is placed behind the uterus to stop any blood from getting into the abdominal cavity.

In no Cæsarean that I have done since I left out all gauze packing has there been any marked distension.

SECTION XII.

NAUSEA AND VOMITING OF PREGNANCY.

Case 48. NAUSEA AND VOMITING OF PREGNANCY. Patient is seen in consultation on the afternoon of August 10th, and the following history is obtained from her. She is about eight weeks advanced in her first pregnancy, having skipped one period and the second is just due. Her menstruation began when she was twelve. It appears regularly every twenty-eight days and lasts four days. She never has any pains or other discomfort from it. Nausea appeared two weeks ago and for the first week was annoying but she did not vomit. For the past week she has vomited she says from six to ten times a day, at no particular time. The nausea is marked in the morning but this passes off by noon. The vomiting continues throughout the day at irregular times until she goes to bed and gets to sleep. She is sleeping poorly, waking up frequently and when awake is very restless. For the last two days she says the sight and smell of food nauseates her and since yesterday morning has eaten nothing. She has taken an occasional sip of water. She has no headache. She has not been jaundiced. She complains of no pain anywhere except of burning in the pit of her stomach and she says that what she vomits is greenish and very bitter. Her urine burns when passed and she says in the past four days it has become very dark in color. Her bowels have moved once in two or three days. The physician in charge says he has tried all the usual drugs recommended for nausea but that they have been of no avail.

When I saw her she was in bed but had gone there simply because I was coming out to see her. Up to now she had been up and about her home. She has very high color. Her lips are dry, as is her skin. Pulse 80, not high tension. Temperature 98.6°. Physical examination: — Breasts firm, areola is very dark and the glands of Montgomery very

prominent. Heart and lungs not examined as the physician said they were normal. Abdomen is scaphoid and there is no tenderness present on palpation. Kidneys are not palpable. Spleen not felt. Percussion of liver area is normal. There is no tenderness at the costo-vertebral angles. There is no jaundice present. Vaginal examination:—No secretion can be expressed from the urethra. There is no blueness of the vagina. The cervix is soft and in normal position. The uterus is in normal position and is distinctly enlarged. Nothing abnormal is felt on the sides of the pelvis. The rectum is full of hard feces. No specimen of the urine was seen but the physician said at his last examination of it two days ago it contained no albumen. The twenty-four hour amount is not known.

On talking with the husband it is very evident that he is very apprehensive about his wife's condition and the reason for his worry was that his own sister six months ago, he said, died from the vomiting of pregnancy. He frankly admits that he has been talking to his wife about his sister's death.

We told him that there was not the slightest reason for him to be alarmed at the present time about his wife, that unquestionably within forty-eight hours there would be a marked improvement, that he must stop worrying his wife and that he must not mention his sister's death to her again. We advised him to let us get a nurse at once and with a nurse in charge, his wife's condition would quickly improve. He agreed to have the nurse and one was sent for at once.

The following treatment was suggested:—The patient was to stay in bed absolutely and to get up for nothing. Her bowels were to be moved at once by a high enema of magnesium sulphate two ounces, glycerine two ounces, water two ounces. The twenty-four hour amount of urine is to be measured and also the amount of fluids ingested. Her diet for the next twenty-four hours is to be only milk, not more than two ounces every hour. If in the first few hours after the nurse arrives she does not vomit the milk she may then have six or eight ounces every four hours while awake. She is to take as much water as she can. She asked for the sparkling waters and she was allowed them. The only medicine

ordered was the triple bromides 40 gr. by rectum three times a day. The bromides were to be kept up for but two days if the patient's condition improved. If she continued to vomit another day she was to be put on rectal feeding. She was to be allowed no visitors and her husband was to be kept out of her room as much as possible. Above all, the patient was confidently assured that she was not in the slightest danger and that in a few days she would be well again. She was frankly told that the nausea probably would not entirely stop for some weeks yet, but she was promised that it would not be excessive.

August 25. A note to-day from the attending physician in which he said that the nurse at once gained excellent control over the patient and the patient began to improve in twenty-four hours. She ceased to worry about her condition and although the vomiting kept up for two days after I saw her it occurred less and less. He stopped the bromides at the end of two days. The acid eructations were very disagreeable but milk of magnesia gave the patient marked relief. The twenty-four hour amount of urine was now four pints, and the bowels moved every day by enema and twice a week she was given a cathartic by mouth. She had not vomited now for over a week and the nausea was but slight. The nurse was still in the household and the patient was now up and about.

The further history of this case was that she went to term with no return of the nausea and the physician-in-charge delivered her successfully after a long slow labor, by forceps.

Case 49. NAUSEA AND VOMITING OF PREGNANCY. INDUCTION OF LABOR. RECOVERY. Patient is seen in consultation April 10th. The following history is given by her physician: —

She is now seven months advanced in her second pregnancy. Her first pregnancy two years ago was terminated at six and a half months because of severe nausea and vomiting. The present pregnancy progressed without undue amount of nausea and no vomiting until the first week in March when she had a very severe attack of asthma. Immediately after this attack, nausea became very marked and the vomiting began. Until March 20th she kept down the greater part of her nourishment and had been out and about each day. From March 20th to April 1st the vomiting steadily increased and the greater part of the time she was kept in the house, and most of it in her room. During the past ten days in spite of varied treatment she has grown steadily worse. For the past six days she has been in bed, with a trained nurse in attendance. Six days ago all nourishment by mouth was withdrawn and the patient has been on nutrient enemata. For three days she tolerated them well and the nausea and vomiting, at least, were no worse. For the past three days her pulse has been steadily but slowly rising. She has lost much weight. For the last three days she has been vomiting constantly and expelling her nutrients. The vomitus is dark brown and of very acid taste. This morning she rebelled at the treatment and said she knew if she ate some crackers and milk she could keep them down. Against her physician's advice she did eat them and at once had severe nausea followed by vomiting. This vomiting has kept up since eleven o'clock until now, three P.M., almost incessantly. Each time she vomits she passes by rectum a small amount of mucus. The physician says her urine three days ago was normal.

The patient gave me the same story as above related with the addition that since noon objects in the room are blurred and that the figures on the wall paper are much distorted. She also complains of a fullness in her head but she says it is not a real ache.

The patient is pale and anxious looking and her face is very thin. Her lips are dry and cracked. Her pulse is thin and high tensioned, 140 to the minute. (Before she knew I was coming out to see her it was 130.) Heart and lungs not examined as the physician said they were normal. Abdominal examination: Fundus is one inch above the umbilicus. Fetal motion is felt on her left. There is slight tenderness in the left lower quadrant but no spasm. There is no tenderness in the epigastrium. No tenderness over the liver. Liver area is apparently normal by percussion. The spleen and kidneys are not palpable. There is no jaundice present. Her legs are very flabby and her skin is very dry. Her temperature is 99.4°.

The steady rise in pulse, the elevation of temperature, the eye symptoms, the emaciation, the marked desiccation were all bad symptoms and I unhesitatingly advised that the uterus be emptied. We then talked the situation over with the husband. Before we began he made it very clear that he wanted every precaution taken for the mother's life. He cared not the slightest for the baby. The physician then told the patient of our decision which she readily accepted.

The question then came up of how to empty the uterus. The shock of dilating and emptying the uterus under ether seemed to me, much too grave a risk to assume and I advised rupturing the membranes, putting in a Voorhees bag without ether and then to wait for labor. The suggestion of attempting anything without ether was very alarming to the patient and so we decided to give her ether. The instruments were sterilized and the patient was shaved, prepared and placed across the bed before any ether was given her. Everything was ready and she was told to breathe the ether in as fast as she could with the hope that a primary anesthesia would be sufficient. She breathed as told and a beautiful primary ether was obtained. The cervix fortunately was soft and had from the previous accouchement forcé a bilateral tear. The bag was very quickly pushed by the internal os and the membranes ruptured. She at once began to move and came out of ether. The bag was dilated after she was perfectly conscious.

The bag was in place at five P.M. and at six P.M. the uterus was felt to contract very slightly. The pains then began coming at very irregular intervals from five to twenty minutes apart and lasted from five to thirty seconds. With each contraction of the uterus the bag was gently pulled on. By seven-thirty the pains were coming every ten minutes and lasted for nearly one minute.

It was now evident that she was in good labor and in all probability would so continue until the fetus was expelled. The nurse pulled gently on the bag with each pain. The patient's pulse dropped to 120 and she was standing the labor well. As the physician-in-charge said he would look after the delivery, I withdrew.

A telephone message from the physician the next morning saying that the bag came out at three-thirty and forty minutes later the baby was born. It gasped a few times and then died. The placenta came away without difficulty. Her pulse remained 120 and she was in no worse condition than before the delivery.

A month later a letter from the physician was received in which he said that the patient made an excellent convalescence, that within twenty-four hours she began taking liquids without vomiting and gradually her diet was increased without any return of the nausea or vomiting, that she now is gaining weight rapidly and is up and about her home.

Summary of Nausea and Vomiting of Pregnancy.

The usual classification of the causes of nausea and vomiting of pregnancy, namely reflex, neurotic or toxemic, is not satisfactory. If all cases of this condition are regarded as a type of a toxemia then the treatment becomes more reasonable. We have all seen cases where the uterus was in abnormal position and yet there has been no nausea. Again we have seen the highly-neurotic girl go through her pregnancy with no more than the usual discomforts due to the increase in her size. We have also seen patients with no demonstrable physical or nervous abnormality show severe and dangerous nausea and vomiting of pregnancy. Un-

questionably there are different types of vomiting of pregnancy, but the underlying cause of practically all is a toxemia.

Case 48 showed a nervous element but back of it all was the toxemia of faulty elimination both by the bowels and by the kidneys. The fundamental treatment in these cases is to obtain proper elimination of all the products of metabolism. Williams's work on the ammonia co-efficient of the urine, excellent as it is, can because of the very complexity of the analysis never become available to the general practitioner. He must rely on general physical examinations to guide him in his management of these cases.

A complete physical examination must first be made and any abnormality rectified. Deviations from the normal position of the uterus are to be corrected. But above all, elimination of the toxins must be secured. In severe cases, hospital care will many times aid in the recovery. There can be no routine treatment of these cases except the one and fundamental treatment of elimination. Various drugs will help the different symptoms, but they do not cure the condition. The great number of drugs recommended not only of the pharmacopœia but of the patented combinations all prove their inefficacy. For the gastric distress the various anti-acid drugs must be tried; no one can be relied upon. If the nervous element is prominent I have had the best results in large doses of the triple bromides forty to sixty grains every four hours for three or four days, gradually decreasing the dose as improvement begins. The simple cases promptly yield to treatment if they are put to bed early, fed small amounts often, of readily digestible foods and if a nurse of pleasing but strong personality is put in charge of the patient. The danger in the so-called pernicious type lies in the fact that we persist in delaying emptying the uterus too long. In these serious cases the determination of the ammonia co-efficient will be of aid. A high ammonia co-efficient however is not the absolute diagnostic sign that it first was thought to be. Fortunately the fulminating type of this toxemia is rare. In this type no matter what treatment is instituted the results almost invariably are bad.

Until we discover the underlying cause of these toxemias our treatment must necessarily be largely empirical.

Had Case 49 been put to bed earlier and more vigorous treatment instituted the result might have been different. When the consultation was called there was nothing left but to empty the uterus as quickly as possible with the least amount of shock.

SECTION XIII.

TOXEMIA OF PREGNANCY AND ECLAMPSIA.

Case 50. TOXEMIA OF PREGNANCY. INDUCTION OF LABOR. Patient is seen for the first time October 16th. She is the wife of a physician who has been looking after her himself up to the present time and had chosen no one to look after her at her confinement. He says over the telephone that she is eight months advanced in her first pregnancy. She is supposed to have been perfectly well up to two days ago when she complained of slight headache. No nausea. Some slight blurring of vision. Bowels slightly constipated. Urine a month previously had been perfectly normal but had not been examined since, until yesterday, when examination showed it to contain a large amount of albumen, some blood and casts of various descriptions.

I saw her about 8:30 in the evening. She then was having considerable pain in the right upper quadrant in the region of the gall bladder running through to the back. There were no flashes of light before her eyes and there was no blurring of vision. She had no epigastric pain and no vomiting. She had within an hour been put into a hot pack and when I saw her was sweating profusely. Her face was markedly edematous. Edema of the legs and hands was not marked. Her last period was February 10th. Palpation of the abdomen showed a fair-sized fetus. Fetal motion was felt. No edema of the abdominal wall. Temperature was normal and pulse 100, full and bounding. She now was drinking plenty of water and was not vomiting. Her bowels had not moved to-day. I ordered at once a high glycerine enema and also a teaspoonful of magnesium sulphate by mouth every hour for six doses. Because she was sweating profusely and because she had had no efficient treatment up to now I advised against operative delivery.

October 17. 9 A.M. She continued to perspire freely dur-

ing the night. Her bowels have moved four times since I saw her. Edema distinctly less in the face. Mental condition is satisfactory. No epigastric pain. No headache. She now is perspiring freely. She is drinking milk and lime water. In the last twenty-four hours she has passed 23 ounces of urine. High in color, specific gravity, 1.026. Albumen ¼%. Few normal blood corpuscles; many hyaline and fine granular casts present. Pulse 70, high tension. Normal temperature.

3 P.M. She has not improved as much as I had hoped. The amount of urine that she was secreting was lessening. From nine o'clock this morning to three this afternoon she passed only two and one-half ounces of high-colored urine. Her skin was dry. She had no headache or epigastric pain.

I then decided because she was not improving to induce labor by means of the Voorhees bag. When everything was ready she was etherized, and vaginal examination showed a small introitus admitting only one finger. Board-like perineum. I carefully dilated the perineum, but even with as much care as possible I tore the skin to the sphincter. Cervix was not taken up and not dilated. With the aid of a Goodell dilator dilated the cervix so that it would take the large-sized rubber bag readily. The bag was then distended with water. She came quickly out of ether. One-half hour after she was out of ether the bag was pulled on regularly every fifteen minutes and each time a definite uterine contraction was caused. An hour later uterine contractions were felt occasionally and the bag was pulled upon every ten minutes. For the next two hours pains increased in frequency, becoming regular at every three minutes, lasting thirty to forty seconds. The patient was kept in blankets, in a flannel wrapper surrounded by hot water bags and she perspired freely. During the night the pulse remained good, 80 to the minute. Uterus was contracting every three to five minutes and at each contraction the bag was pulled upon.

At six o'clock in the morning of the 18th, it was noticed that the edema of the face was increasing and the patient noticed that it was with difficulty that she opened her eyes.

Between quarter and half past six the pains slackened and became less hard. Pulse had gradually crept up and now was 120. I determined to deliver her and an assistant was sent for and at half past seven she was again etherized. The bag was removed. Before any examination was made the vagina was wiped out with 70% alcohol. The os uteri was then found to be four fingers dilated and was very soft. After the perineum was again dilated up thoroughly, the cervix was readily dilated manually to full dilatation. Position of the fetus was found to be O. L. A. Head was floating. Head was held by the assistant at the inlet and forceps applied to a high O. L. A. position. Cord was found down beside the head and pulsating. Blades were applied without pinching the cord. Etherizer verified this fact by listening to and hearing the fetal heart. Application readily obtained and with easy traction the head at once descended, the only difficulty being that the anterior lip held slightly. As soon as this resistance was overcome the head came down further and was delivered, the body readily following. The baby began to breathe regularly and soon cried. Baby was carefully done up in a warm blanket and put aside with heaters. Examination of the perineum showed a superficial tear extending to the sphincter; two sutures of chromic catgut brought the body of the perineum together excellently and with three silkworm-gut sutures placed externally the external perineum was brought into apposition. The placenta was delivered intact with all the membranes. Very small amount of bleeding took place. After the delivery of the placenta the sutures were tied. The uterus was not held as bleeding was wished for. No ergot given. She made a good recovery from ether. No vomiting. Pulse 100, full, high tension and bounding. She was given morphia gr. 1/6 every six hours. Croton oil 4 drops were given as soon as she was out of ether and four hours later were followed by a glycerine and water enema. At 7 P.M. the patient passed four and a half ounces of urine, high colored. Pulse distinctly less high tension, rate had dropped to 90. Patient was not vomiting. She was perspiring freely and fluids are to be forced. Edema was distinctly less. Baby weighed five and a half pounds and

is being treated as a premature baby and has been put on a weak modified milk formula.

October 19. Temperature this morning normal. Pulse 100. Slept fairly well last night. Her skin is moist. Bowels have moved twice since last visit. Since seven last night to ten this morning she passed thirteen ounces of urine. It is stained by the lochia. Edema of the face is still present. Milk has been given her every four hours, five to eight ounces as she wished it. She was ordered a tablespoonful of magnesium sulphate. Morphia continued.

Evening visit. Temperature 99° and pulse 90, still full and bounding. Patient is bright and happy. Edema of the face distinctly less. Bowels have moved four times during the day. Since the morning visit she passed more than twenty ounces of urine as some was lost with the movements. Lochia is normal. Uterus is well contracted and not tender. There is no milk in the breasts. Morphia is stopped.

October 20. Temperature normal. Pulse 84. Lochia normal, stitches look well. Slept seven hours last night. Bowels moved this morning by suds enema. Urine is increasing in amount steadily. Edema is much less, practically none of the legs and very little of the face.

Evening visit. Temperature 99°, pulse 78. Has had an excellent day in every respect. She is becoming hungry and wants something more than milk. Is to have soft solid diet from now on. The blankets and flannel wrapper were omitted to-day.

October 21. Temperature this afternoon 98.8°, pulse 80, distinctly lower tension and less bounding. Urine is now about forty ounces in amount each twenty-four hours. So much lochia is present that its color is not determined and has not yet been examined.

October 26. Has made an excellent convalescence. Is passing seventy ounces of urine, light in color. Albumen 0.2% by Esbach's test. Sediment shows many hyaline and fine granular casts with renal elements adherent. Many large and small round cells. No blood. Occasional leucocyte. There has been no milk in the breasts and the baby is doing

well on modified milk. The patient is gradually being allowed more and more freedom in her diet, but as yet has had no meat.

November 12. The patient got out of bed the twenty-first day. From then on she gradually got about and made a steady gain. Vaginal examination to-day. Excellent result on the perineum. Bilateral tear of the cervix, slight on her right, marked on her left. Uterus is well involuted, normal in position and freely movable. No tenderness in the pelvis.

She still persists in having varying amounts of albumen with casts in her urine and I advised her to see an internist for the care and treatment of her nephritis. This she did. Eight months after the delivery she still showed a nephritis and the internist felt that the condition would never entirely disappear.

Case 51. TOXEMIA OF PREGNANCY. INDUCTION OF LABOR. Patient presents herself at the office September 26th. She is in the seventh month of her first pregnancy. Up to the present time she has been looked after by a physician in another city. She has always been a well woman. Her last period began on February 23rd making delivery due about the first of December. Except for marked nausea which began at the sixth week and lasted for three months, pregnancy has been perfectly normal. Her blood pressure is 120 mm. of Hg. Examination of the urine on September 28th showed the color to be normal, reaction acid, specific gravity 1.002, no albumen, and no sugar. Sediment not done.

October 21. She telephones to-day that she has a slight headache and has noticed that her wedding ring the last few days was a little tight and that her feet were swelling. I saw her at once. She has no epigastric pain. Occasionally she has thought her eyesight was blurred. Blood pressure 120. Slight edema of the hands and feet. None of the face. Temperature normal, pulse 72. She was at once put onto a strict milk diet. She was told to take at once half a teaspoonful of salts every half hour for six doses. This evening she was told to take a hot tub bath and then to be covered up with blankets in order to sweat. The urine at this time was found to be high in color, acid, specific gravity 1.020, albumen a very slight trace, no sugar. Sediment shows a few hyaline and fine granular casts. No blood. Few small round cells and vaginal detritus.

October 22. She perspired freely after the hot bath last night. This morning has no headache and swelling of her hands is less. No blurring of the eyesight. Blood pressure 120. Bowels have moved five times since last note. She is to take enough magnesium sulphate to obtain three or four movements each day. No change in the diet.

October 31. She has been seen every day since the last note and is in excellent condition. No edema of the face, hands or legs. In the past week she has had an occasional slight headache for an hour or two during the day, usually in the frontal region. She is passing three pints of urine.

It contains the slightest possible trace of albumen. Specific gravity 1.016. Sediment shows a rare hyaline and fine granular cast, few round cells, occasional leucocyte, much vaginal detritus. No blood. Her blood pressure has not been over 120. To-day she is to have cereal, toast and crackers added to her diet.

November 2. She vomited, this morning, her breakfast which consisted of oatmeal, a piece of toast and a glass of milk. She had no headache, no epigastric pain and there was no edema present. Blood pressure was 132. She was absolutely comfortable when I saw her with no untoward symptoms except the rise in blood pressure. Urine was remaining at three pints and no change in the analysis. She was put back to an absolute milk diet.

November 5. She has had no headache, no vomiting and no untoward symptoms since the last note. Her blood pressure has not been over 120. Cereals and toast again added to her diet.

November 7. She saw an oculist to-day to see if there is any condition in her eyes which might cause her headaches as they now come only after reading or sewing. The oculist, however, found nothing wrong in her eyes.

November 13. She has been seen every day and a specimen examined every other day and there has been no change in her condition until to-day. Blood pressure at no time had been over 120. Husband brought in a specimen to-day from the twenty-four hour amount ending this morning. Amount 26 ounces. Color high, specific gravity 1.026, large trace of albumen. Sediment the same as before with the addition of a few normal blood corpuscles. I saw her at noontime and found her with a pulse of 90. Blood pressure 142. Complaining of a severe frontal headache. Edema present in the hands and legs but none of the face. No epigastric pain. No flashes of light before her eyes. Skin is dry. She has voided no urine since 7 A.M. and cannot void any now. Her bowels have not moved to-day.

She was sent at once to a private hospital. As soon as she arrived there she was given a glycerine and water enema with excellent result and then given a hot tub bath for

twenty minutes. She was put into a flannel nightgown and between blankets, and surrounded by hot-water bottles. She very quickly began to perspire freely. Her pulse remained of good quality. She was again put on an absolute milk diet and water forced.

When I saw her again at six P.M. her skin was moist, her headache was less and she had passed 7 ounces of urine, since she was in the hospital, in four hours. The Epsom salts which had been given her in teaspoonful doses every half hour for six doses had given two large watery movements. She has responded well to treatment and there is no indication to interfere.

November 14. She had a fair night. Blood pressure is 140. Less headache, less edema over the hands and none over the tibiæ. Since she entered the hospital, in eighteen hours, she has passed fifty ounces of urine, light in color, specific gravity 1.012, slightest possible trace of albumen. Sediment the same, but no blood.

November 17. Has had no headache and is bright and feeling very well. She has had a hot bath once a day and her skin has been very active without being surrounded by heaters. She objects to sleeping in blankets and to-day they were taken away. Is passing from forty to sixty ounces of urine daily. Bowels are well open. Blood pressure 130. She is to have cereals, toast, and crackers from now on, besides her milk and is to sit up in a chair surrounded with blankets this afternoon.

November 21. For the past two days she has been up and dressed about the hospital. She has done consistently well since the last note. She is very anxious to go home and as she has no untoward symptoms I agreed.

November 24. She has been seen each day since she went home. Blood pressure has been 130 each time. Urine has been seen each day and it has shown no marked variations from the previous analyses. The husband came into the office this morning and brought a specimen. He reports that last night she was awakened by a headache, but within a short time it went away and she went to sleep again. When she waked this morning it was again present and more

severe. Examination of the specimen showed a trace of albumen, specific gravity 1.012. Sediment of the same characteristics, but the number of casts much increased.

I advised the husband to take her to the hospital at once and to have labor induced, and told him that the risk of carrying her along any further was much greater than the risk of induction of labor, that in all probability a live baby would be obtained. This he agreed to at once and went home and brought his wife to the hospital. As soon as possible after entrance she was prepared. Preparations for inducing labor by means of the Voorhees bag were completed and the patient etherized. Vaginal examination showed the head in the pelvis; cervix soft and partially taken up; one finger could be put through the internal os. Large-sized Voorhees bag put in very readily at 1:10 P.M. In doing it the membranes ruptured, but very little liquor came away for the bag was quickly dilated. The tube was tied and the vulval pad put in place. She was put back to bed and covered with blankets and surrounded by heaters. Very little ether was used. At 1:50 she complained of a pain and the first contraction was noted. Contractions then came at ten-minute intervals of fifteen to thirty seconds duration. With each pain the bag was pulled upon. Pains steadily became harder and at five o'clock were coming every two minutes and lasted one minute. Fetal heart remained regular at 150 in left lower quadrant. Uterus was relaxing well and patient was in excellent condition. Blood pressure 140. Shortly after five she suddenly complained of a terrific headache and at once began to hold onto her head. She was perspiring freely. She had no epigastric pain, no blurring of vision and no flashes of light. Her pulse at this time was 100. Except for the headache she was in excellent condition.

I advised that she be delivered at once, because of this severe headache. Her husband readily consented as did the patient and preparations were hurriedly completed. Ether was started at 5:30. The bag was removed and the patient then scrubbed up. The vagina was carefully washed out with 70% alcohol. Os uteri was found nearly three quarters dilated but was thick. Perineum was thoroughly dilated.

The cervix was then dilated manually as much as possible. Position O. L. A. Patient was catheterized but only a few drops of urine obtained. Forceps readily applied to an intermediate head. On the first traction the head came down and met the resistance of the cervix. Considerable traction needed to overcome the cervix, but as soon as the cervical resistance was overcome, the remainder of the delivery was effected without difficulty at 6:20 P.M., November 24th.

Baby breathed at once and in a few moments began to cry. Cord was clamped and cut at once and the baby carefully done up and put aside in a warm place.

Examination of the perineum showed slight internal tear on the left and a deeper one on the right. No external tear. Tears at once repaired with chromic catgut sutures. Patient's pulse was now 140, but of good quality. She fortunately was bleeding rather freely, and as she was in good condition, I determined not to check the bleeding at once. On the sixth contraction the assistant expelled the placenta. Bleeding then at once stopped. Pulse after the placenta was delivered was 130. Cervix was not examined. She made an excellent recovery from ether and at eight P.M. had a pulse of 114. Blood pressure was 110. At ten P.M. the patient had a temperature of 101.4° and a pulse of 110. Blood pressure 120. Skin was moist. She had slight headache, but was clear mentally and had no untoward symptoms.

November 25. Temperature 99°, pulse 108 this morning. Blood pressure 120. Has absolutely no headache. Voided urine this morning with the help of a high, large hot enema. Baby is in excellent condition and is to be weighed to-day. Forceps marks are very clear, one behind the ear and the other over the right eye and forehead showing that I placed the second blade too far forward. Patient is on a milk diet only. She was ordered to-day an ounce of castor oil.

November 26. Temperature 99°, pulse 90. Uterus well contracted. Lochia normal. She voided the past twenty-four hours thirty ounces of urine besides some which was lost. Has no headache. Blood pressure 120. She is now having gruels in addition to milk.

December 5. Has made an excellent convalescence. Tem-

perature, except the night of the fourth day when it was 101°, has been normal. The highest the pulse has been was 108. At no time has the uterus been tender and it is involuting well. Lochia is still red. It has been difficult to get an uncontaminated specimen of urine. Examination of one to-day showed a trace of albumin, but this is due to the presence of blood from the lochia. A few casts were found.

Temperature on the fourth day was undoubtedly due to the appearance of milk in the breasts. The baby up to this time had been on a modified milk, but then was put on the breast and nursed well. The baby weighed at the first weighing seven pounds and fifteen ounces. It is nursing regularly and well. Forceps marks have nearly disappeared. The patient now is having a soft solid diet. Her bowels are moving daily with licorice powder in the evening, followed by an enema in the morning.

December 15. She began her leg exercises on the twelfth day and to-day sat up out of bed. Is in excellent condition and is to go to her home to-morrow.

December 30. Has had at intervals a slight bloody vaginal discharge so that she has had to wear a napkin the majority of days since she left the hospital. She is feeling well, is nursing the baby and is taking entire charge of her. Baby now weighs 9 pounds and 2 ounces.

Vaginal examination shows no bulging of anterior or posterior wall on straining. Perineum is well healed except on the left where there is a small granulating area the size of a pea which bleeds readily when touched. The uterus is normal in size and position and is freely movable. There is a well-marked bilateral tear of the cervix with some erosion of the lips. If the cervix is touched with forceps it bleeds at once.

This bloody vaginal discharge undoubtedly comes from the bilateral tear and the resulting endocervicitis and with local treatment much help can be given her, but as she lived some distance out of town and it is difficult for her to leave the baby long enough to come in for treatment, I advised her to take plain warm water douches twice a day. Two weeks later she reports by telephone that she now has only a slight

leucorrhea and considers herself perfectly well. A specimen of urine which she sent in the next day showed the color normal, reaction acid, specific gravity 1.029. Albumen absent by the nitric acid and by the heat test. Sediment: — No blood or casts seen in two slides. Few leucocytes and much vaginal detritus.

Case 52. TOXEMIA OF PREGNANCY. LOW FORCEPS. Patient is seen for the first time June 24th. She is now advanced eight months in her first pregnancy. Her last menstruation began on October 26th. It was normal in every respect. Her menstruation began when sixteen years of age and comes every twenty-eight days. She has severe pain the first two days which necessitates her going to bed. She has always been well and has never been in bed with any serious sickness. She had been looked after, up to the present time, by an out-of-town physician. There has been milk in her breasts for the last four months and so much is now present that she has had to wear pads of absorbent cotton to protect her clothes. She will be due for delivery the week of August 8th. Palpation to-day shows a fair-sized baby lying in the left position. The head is at the brim and freely movable. Fetal heart in the left lower quadrant, 120 to the minute. Measurements of the pelvis show crests to be 30 cm., spines 24 cm., external conjugate 20 cm. She was told to measure her 24-hour amount of urine and to bring in a specimen as soon as possible. Blood pressure is 120 mm. of Hg.

July 2. Sent in a specimen from the 24-hour amount of urine, which is just under one quart. Analysis shows it to be high in color, acid, 1.028, albumen absent, sugar absent. She was told at once to drink enough water to pass at least three pints of urine.

July 9. She reports that she is now passing three pints of urine and bowels are moving well every day.

July 24. She reports that she has been having a headache for the past two days and that objects are slightly blurred. I saw her as soon as possible and found her with a pulse of 80, rather full and bounding. Her eyelids were slightly puffy. She is not having any spots in front of her eyes. No flashes and there is no epigastric pain. No edema of the ankles or of the wrists. Headache she says is more frontal and is present all the time even at the moment she wakes up in the morning. Her blood pressure is 150. Specimen was obtained. She was ordered a teaspoonful of Epsom salts every half hour until her bowels moved. Told to take

a hot bath and to go to bed at once and then to cover herself up well in order to sweat profusely. She is to have only a milk diet with large amounts of water. Examination of the urine showed it to be normal in color, specific gravity 1.020, slightest possible trace of albumin by nitric acid and by heat. Sediment shows a rare hyaline and fine granular cast and a few round cells. Occasional leucocyte and vaginal epithelium.

Telephone message from her to-night saying she is much more comfortable. Bowels have moved freely and headache is less and she says she can see better.

July 25. Blood pressure this morning 140. Has no headache. Face is not so edematous. During the night perspired freely. Had five movements. Milk diet continued.

July 26. Improvement is marked and she looks very much better. The skin is moist. Blood pressure is 134 and she has absolutely no headache. Has had no vomiting and she can see perfectly well at the present time. Twenty-four hour amount of urine to-day four and three-quarters pints, analysis of which was pale in color, acid, specific gravity 1.006, slightest possible trace of albumin by nitric acid. Sediment: — Very rare hyaline cast seen. She is to be up and around the house to-day. I added to her diet to-day cereals and toast.

August 1. Telephone this morning saying she is having a slight headache. Feels nauseated but has not vomited. Saw her at once. Since the last note she has been perfectly well. Has had no headache. Bowels have moved well and she says her urine has been sufficient in amount and of light color. Face is not edematous but there is slight edema of the ankles and of the hands. Blood pressure 144. Skin is moist. Her headache at the present time is right sided and not in the frontal region as before. Her bowels have moved well by Rochelle salts every morning. She was told to take a hot bath at once and to go to bed. Bowels are to be kept more freely open by small doses of Epsom salts. This afternoon she had no headache and could see perfectly well and apparently is in very much better condition. Blood pressure 132. Vaginal examination shows the biparietal

diameter through the brim. Promontory cannot be reached. Cervix is flush with the vaginal vault but the os is not dilated. Right ischial spine is very prominent. The left is not. The arch of the symphysis is normal. Contour of the pelvis is normal. Ischial tuberosities 10 cm. with Williams's pelvimeter. Perineum is thick and rigid. She is to get up tomorrow if the present improvement continues. Milk diet is continued.

August 9. From the above date to now she has been perfectly well. No headache. Bowels have been moving well. Urine at no time has been less than three pints. Her diet was gradually increased to soft solids. At 8 P.M. husband telephoned that his wife has been having a few indefinite pains. He was told to take her at once to the hospital. The hospital was notified to determine first if she were in labor. If she were not in labor to let her sleep and not to prepare her.

August 10. Six A.M. hospital telephoned that the patient had been having pains the last half hour at ten-minute intervals lasting thirty seconds, that there were sharp contractions, that they now had begun her preparation. From six until seven she had good hard pains every ten minutes, but they then stopped entirely. I saw her at quarter past nine. She was having no pains. Temperature was 98.6°, pulse was 76. Blood pressure was 130. Palpation of the abdomen shows a large baby. Back is on the left. Fetal small parts readily made out on the right. Head is well engaged in the pelvis and by the fourth manœuvre it is seen that the head is well flexed. Uterus is soft and fetal heart is 120 in the left lower quadrant. At 11 A.M. pains began coming every ten minutes. This rate continued until two o'clock when the pains began coming every seven minutes and lasted from three-quarters of a minute to a minute and a half. Vaginal examination showed the perineum very rigid. The head was on a level with the ischial spines. The os was dilated two inches, but the cervix was thick.

From three until half past six she had hard pains every five minutes lasting one minute. Fetal heart remained at 120. Palpation from above showed that the head could not be

reached. Uterus was relaxing well between pains. At 6:30 palpation of the abdomen showed that the uterus was still soft and relaxing well. A full bladder was very evident and she then voided fourteen ounces of urine. She refused any ether up to the present time. Her pulse at this time had risen to 90. Membranes ruptured at 6:30. At 7:30 she began to bear down and there was the very slightest possible bulge of the perineum. Fetal heart remained at 120. At eight o'clock she was given obstetrical ether with much relief. From eight to nine she had pains every two minutes lasting one minute and with each pain the perineum bulged a little, but there was no material progress. At nine I determined to deliver her. She was placed in lithotomy position. The usual aseptic precautions were taken. She was catheterized and considerable amount of urine withdrawn. When the labia was separated the head was in sight. The perineum was thoroughly dilated. It was noticed that the occiput rotated from an O. L. A position to full rotation and back again to O. L. A. several times. I could not reach an ear and therefore put on forceps to the sides of the pelvis, being guided by the sagittal suture and the posterior fontanelle. Cervix not seen or felt as it was behind the head. A slow easy extraction of a large head then done. Circulation of the scalp remained satisfactory and when the perineum was thoroughly dilated the head was carefully delivered. The anterior shoulder was brought to the arch, the shoulders coming down in the left oblique diameter and the baby was born at 9:25. Cord stopped beating almost at once and was clamped and cut and the baby put away. At 9:42 the placenta came away intact spontaneously on the seventh contraction. Immediately followed a gush of bright red blood. The uterus was hard. Examination of the perineum showed there was a slight median external tear. The bleeding was so free that I took a sterile gauze pad, soaked it in 70% alcohol and placed it at once in the vagina and held it in place. The nurse held the uterus down hard onto the pad. At this time pulse was 110 and she was in good condition. Uterus was remaining hard and with pressure from below by the sterile pad the bleeding gradually stopped. At ten

o'clock her pulse was 120 and she looked badly. She was not restless and was not vomiting. She was breathing well and there was no great amount of bleeding at the present time. The gauze packing was taken out of the vagina a few minutes after ten and from then on there was only a slight amount of oozing. Perineum then repaired with two silkworm-gut sutures. The uterus had a tendency to relax and she was given ergot intramuscularly. Uterus held in turn by myself or by my assistant and gradually the bleeding entirely stopped. Her pulse stayed at 120 until eleven o'clock and from then on it gradually came down. At half past eleven the rate dropped to 100 and the volume improved. She stayed absolutely quiet, was not restless and was breathing well. The uterus did not bleed although it still had a tendency to relax. At one she had a pulse of 90 and the uterus was hard and well contracted. Blood pressure was 100. She took some broth at one o'clock which was repeated again at half-past one. The baby weighed eight pounds and eleven ounces and was in excellent condition. I left her at half past one. There was no bleeding and the uterus was hard. Pulse 90, of fair volume and tension.

August 11. Temperature this morning normal, pulse 80. Has voided and except for tenderness over the fundus is in perfectly satisfactory condition. Lochia normal.

August 12. Temperature 98.6°, pulse 80. Uterus is at the umbilicus, well contracted, secondary tumor is present, just below the fundus. Nurse says however that six hours ago she voided ten ounces of urine. Patient was asked to void again and when she was voiding nurse pressed down immediately over the secondary tumor and she passed twelve ounces of urine, but there still was a small tumor present. It is quite evident that the bladder is not entirely empty.

August 13. Temperature 99°. Pulse 80. Baby is nursing every two hours and is satisfied. There is still a secondary tumor in the abdomen. She is unable to empty her bladder completely. The uterus is hard and is still at the umbilicus. Not tender.

August 17. Temperature and pulse continue normal.

Except for the fact that the uterus has gone down very slowly and is still only a finger breadth below the umbilicus, she is making a perfectly satisfactory convalescence. She now is able to empty her bladder completely.

August 20. Stitches removed to-day and apparently a good result obtained. Baby is nursing regularly and apparently is satisfied.

August 31. Patient began her exercises on the fourteenth day and they did not increase the lochia. She got out of bed today and is doing well. Tomorrow she is to walk around the hospital and although she looks badly I can find nothing obstetrically wrong.

September 8. She goes home today. Has steadily improved and for the past week has been on regular hospital diet.

September 16. Vaginal examination made to-day shows excellent result on the perineum. Cervix has a very slight bilateral tear. Uterus in normal position and very small; freely movable. Nothing on the sides. There is a slight brownish discharge present at the cervix, but she does not have to wear a pad. Baby is doing well. Umbilicus is healed. Movements of normal characteristics.

She was asked to send a specimen of her urine to the office. Examination of this specimen showed it to be normal in all respects. Both patients are discharged well to their own physician.

Case 53. TOXEMIA OF PREGNANCY. CONTRACTED PELVIS. CÆSAREAN SECTION. Patient is seen in consultation December 24th in answer to a telephone message from a physician saying that he had a patient with a marked kyphosis, who in the last forty-eight hours had developed a large trace of albumin, that she was getting very edematous but that she had no headache. I saw her at once with him and got from her the following history: She is within two weeks of term in her first pregnancy. She has been under observation for the past month and the first thing wrong that the nurse noticed, was five days ago when the right leg was slightly swollen. The nurse thought nothing of it but the next day she noticed that the left leg was also swollen. There was no swelling of the hands. Yesterday the physician saw her and found a large trace of albumin in the urine. She was at once put to bed and put on a milk diet. When I saw her she was not complaining of pain anywhere. No headache. She thought her face was slightly swollen. Examination shows the patient to be a typical rhachitic dwarf. The abdomen is so pendulous that it touches her thighs for a distance of nearly five inches below the groins, where there is maceration of the skin. Her pelvic measurements are intercristal 22 cm., interspinous 21 cm., external conjugate 17 cm. Palpation shows a fair-sized baby lying in a right position. Fetal heart is in the right lower quadrant 120 to the minute. There is no edema of the abdominal wall. There is present marked edema of the feet, ankles and legs up to the knees. No edema of the hands. Very slight edema of the face and eyelids. Patient had a normal temperature, pulse of 80 and a blood pressure of 160. Vaginal examination: No edema of the vulva. Fair-sized introitus. Head is readily reached. Promontory cannot be reached. Symphysis is broad. Pubic arch is narrow and of the male type. The outlet is slightly contracted. Closed fist can just be pushed between the ischial tuberosities. The head can be pushed down into the pelvis.

She has had no proper treatment and I decided to watch her for twenty-four hours and to institute efficient treatment. She was ordered put into a hot bath for one-half hour

and then to be put to bed and covered with blankets in order to induce sweating. She has been drinking not more than two or three glasses of fluid during the day and has been passing a very high-colored urine with about one-half per cent of albumin. It is not known what the sediment contains. She was urged to drink more water. Her bowels have not been moving well. They were to be opened by divided doses of Epsom salts. A strict milk diet was insisted upon.

The question of how to deliver this woman was gone over with the physician, and I felt at this time that the question was more in the action of the markedly pendulous uterus rather than the contraction of the pelvis. I thought that the baby could probably come through the given pelvis; but the probability was that when she started in labor the uterus would push the head directly against the promontory rather than down into the pelvis. Should she push the head by the inlet I felt that the remainder of the delivery would look after itself.

December 25. Physician telephones that the patient had vomited this morning and was a little more edematous and that in the past twenty-four hours she had passed 24 ounces of urine. I saw her at 11:30 and found that the blood pressure had risen to 170. She was having some slight frontal headache. Inspection of the vulva showed that the edema had increased tremendously. So much so that it was scarcely possible to get one finger in the vagina in order to examine her. At the home where I saw her it was impossible to look after a seriously sick woman and so I brought her at once into the Lying-in Hospital and the physician on duty allowed me to look after her after he had seen her with me in consultation.

The edema had increased so much that it was very evident that if we were going to do the delivery from below we would get very severe tears and that probably with the amount of edema present it would be almost impossible to deliver her without a craniotomy and we both agreed that a Cæsarean section was the safest procedure for the mother and undoubtedly the safest for the baby. Examination of the urine passed before operation shows it to be high in color, acid, specific gravity 1.020. Albumin one-half per cent.

Many fine granular and hyaline casts. Some with blood adherent. Many large and some small round cells.

After much delay the patient gave permission for a Cæsarean section. She was then scrubbed up and prepared for operation. She was etherized at eight o'clock and a median incision was made just to the right of the middle line five inches long. The abdomen was opened and a considerable amount of free serous fluid escaped. Uterus found to be in very marked lateral torsion. The right Fallopian tube was almost at the median line. An attempt was made to right this torsion but it was unsuccessful. Walling-off gauze placed in the abdomen. The uterine incision was made in the median line of the abdomen but it was clear that when the uterus recovered from the torsion this incision would be well to the right of the median line. Incision five inches long. Placenta found beneath it. Placenta torn through, the amniotic sac broken and the baby delivered without incident. It was much etherized. Placenta was removed intact, but the membranes were very strongly adherent and required considerable wiping off with gauze to free them. Small amount of bleeding. It was now seen that there was a large amount of free fluid present in the abdominal cavity. The uterus was sewn up as before described. Uterus acted well. Gauze removed. Peritoneum closed with continuous plain catgut suture. Fascia was sewn with interrupted chromic catgut No. 2 and skin incision closed with double-headed silkworm-gut sutures. Patient went off the table with pulse of 130 in fair condition. Baby was readily resuscitated and it weighed six pounds and eight ounces. Patient was at once put between blankets, a flannel nightdress put on and surrounded by heaters.

December 26. Temperature this morning 100.2°, pulse 115. No vomiting. In excellent condition. Abdomen soft. Is taking small amounts of liquids. Has voided once but the urine was so contaminated with the lochia that it was not examined. Her skin is moist and she has perspired freely all night. Temperature to-night 98° and pulse 84.

December 27. Temperature 98.8°, pulse 108. Is voiding urine freely. Distension this morning is noticeable but there is no vomiting. Is taking liquids well. Edema of the

face is distinctly less. She was ordered a glycerine enema with two drams of turpentine and from it obtained an excellent result of gas. Temperature to-night 98.6°, pulse 120. Distension is very distressing. There is no more tenderness in the abdomen than is usual after a section. Enemata frequently repeated give the patient much relief for a few hours but the distension then reappears.

December 28. Temperature stays normal. Pulse this morning 112. Slept fairly well. Were it not for the distension she would be very comfortable and in excellent condition. This morning she was given half a compound cathartic pill every half hour for four doses. Four hours later a glycerine enema obtained an excellent result.

December 29. Temperature 99°, pulse 108. Distension much less. Very little tenderness in abdomen. Urine has been passed with enemata and no accurate account of the amount kept. To-day specimen was light in color, specific gravity 1.015. Albumin slight trace. Sediment shows a few casts, hyaline and fine granular. No blood. Milk is coming into the breasts and the baby is being nursed regularly. Edema of the legs is still present.

December 30. Temperature 98.6°, pulse 72. In excellent condition; distension much less. No tenderness in the abdomen. Patient is now on soft solid diet with much milk.

January 2. Is steadily improving. Temperature and pulse normal. Edema almost entirely gone.

January 6. Abdominal stitches out to-day. First intention wound. Scar solid. Baby is being nursed regularly and is doing well. Urine to-day showed a very slight trace of albumin. Few hyaline and fine granular casts present.

January 10. Patient up in a chair for half an hour to-day. She is in excellent condition. She is now on regular house diet without meat.

January 16. Vaginal examination:—No edema of the vulva, nulliparous cervix. Uterus well involuted and apparently not adherent to the abdominal wall. No flowing. Urine shows the slightest possible trace of albumin and no casts seen. She is discharged to her own doctor for observation of her kidneys. Baby has done consistently well and is also discharged.

Case 54. ECLAMPSIA. VAGINAL CÆSAREAN SECTION. This patient was brought to the hospital November twenty-fifth by friends with the following incomplete and unsatisfactory history. She is seven and a half or eight months along in her second pregnancy. The first pregnancy ended in an early miscarriage. The friends say she was perfectly well up to two days ago when she complained of headaches which have steadily become more severe. It is probable that she had a slight convulsion just before being brought to the hospital. While she was being prepared for examination by the house officer she had a severe convulsion. The physical examination shows slight puffiness of hands and face, slight pitting of the ankles. Heart sounds loud and thumping. No murmurs heard. Lungs negative. Palpation of the abdomen shows the uterus to be a hand's breadth below the ensiform. Fetal motion is seen and felt. Vaginal examination shows the cervix undilated and not taken up. Blood pressure is 240 mm. of Hg. Examination of the urine showed it to be smoky in color, to contain one half per cent of albumin, not enough to take the specific gravity, hyaline and fine granular casts with blood and renal elements present. Pulse 100. Temperature 98.6°.

I determined to deliver her at once by a vaginal Cæsarean section. She was prepared, etherized and placed in lithotomy position. The baby was delivered by version and was alive. It weighed four pounds and twelve ounces. The patient went off the operating table with a pulse of 130 in good condition. Her blood pressure immediately after delivery was 110. While she was under ether her stomach was washed out and an ounce of a saturated solution of Epsom salts left in the stomach. She was placed between blankets and surrounded by heaters. Gradually her blood pressure increased and three hours after delivery it was found to be 150. She was at once bled eighteen ounces and her blood pressure dropped to 90 and her condition greatly improved.

November 26. She had a fair night. She was given enough morphia to keep the respirations down to twelve per minute. Blood pressure this morning 160. She is perspiring freely. She is conscious but not yet clear and well

oriented. She has as yet passed no urine. Bladder is not distended. Uterus is well contracted and not tender. Her pulse is 102. Temperature 99.6°. She is drinking water freely and having salt solution six ounces every four hours by rectum which she is absorbing. Blood pressure to-night 130.

November 27. Bowels moved yesterday and in the afternoon she voided urine which was lost. There is no vomiting and she is retaining the salt solution by rectum. Blood pressure has not been over 130 all day. Temperature to-night 99.8°, pulse 88. The amount of urine the patient is passing is unknown for it is lost with the movements. She is clear mentally. She is drinking much water and taking from four to six ounces of milk every four hours. Morphia stopped this morning.

November 28. Temperature this morning 99°, pulse 82. Slept well all night. She complained of very slight headache. Blood pressure 150. Her estimated amount of urine is sufficient and it is much lighter in color than before delivery but as yet it has not been examined because of the lochial contamination. Temperature to-night was 98.8° with a pulse of 80. Bowels are moving freely by divided doses of salts. The baby gradually failed and died to-day. This evening patient began to complain of severe headache and became listless. Blood pressure was found to be 180. She was at once bled thirteen ounces. The blood pressure dropped to 130. Within an hour the untoward symptoms cleared up.

November 29. Blood pressure 130. In excellent condition. Breasts are not filling up. Lochia is normal. Milk diet continued.

December 1. The patient to-day showed a positive culture of diphtheria and she was transferred to the South Department of the Boston City Hospital.

Here she made an excellent obstetrical convalescence and as soon as negative cultures were obtained she was discharged well. Unfortunately this patient has not been examined since the operative delivery.

Case 55. ECLAMPSIA. PALLIATIVE TREATMENT FOLLOWED BY VAGINAL CÆSAREAN SECTION. January 11. Patient is seen shortly after eleven A.M. to-day in consultation with the family physician who gives the following history. The patient is about seven and one-half months advanced in her second pregnancy. Five days ago she began to have a slight headache but as this was not unusual for her she said nothing of it. She continued having headaches and two days ago had slight nausea and vomited twice. She was seen at this time by her physician who regarded this nausea as an attack of indigestion and treated it accordingly. The urine at this time was not examined. Yesterday afternoon her headache became very severe and at this time she had a convulsion. She was at once taken to the local hospital. She was given one-sixth of morphia subcutaneously and ten minims of veratrum viride. The veratrum viride was repeated every four hours for two more doses. From the time she entered the hospital shortly after three P.M., January 10th until one A.M. this morning she passed seventeen ounces of urine. She regained consciousness about four P.M. and since then she has been clear mentally and with but slight headache.

She has been covered since entrance with blankets and surrounded by heaters. She has had two drops of croton oil. This was followed in two hours by a suds enema from which was obtained a large result.

When I saw her she was bright and smiling. She did not look sick. She has no headache, epigastric pain or flashes before her eyes. Her face is flushed and evidently edematous. Her pulse is 80, full and bounding. She is perspiring freely. She answers my questions quickly and well. No material difference in the history is obtained. She says she remembers nothing from shortly after noon yesterday until sometime early last evening.

PHYSICAL EXAMINATION: — Heart not enlarged; no murmurs present. Aortic second sound is very sharp. Lungs negative. Fundus of the uterus is three fingers breadths above the umbilicus, — small baby lying in a right position. Fetal heart is heard in the right lower quadrant, 130 to the

minute. Her skin is moist. There is slight edema of her face, hands and lower legs. Blood pressure is 180. Vaginal examination: — No edema present. Cervix is undilated and uneffaced. External os admits one finger. Vertex is freely movable above the brim.

Since one this morning to noon, she has passed seven and a half ounces of urine. The specimen I saw was high in color and contained a trace of albumin.

I advised induction of labor by means of the Voorhees bag as the safest procedure for the mother, with the probability of obtaining a living baby, but added that it was doubtful if it would live any length of time. The patient was a Catholic and was much averse to the induction of labor as was her husband.

Against delivery were the facts that she had been nearly twenty-four hours without a convulsion, that her bowels were moving well, that she was sweating profusely, that she had no subjective symptoms and finally, in all probability although the baby will be born alive and can be baptized it will not live to grow up. For delivery are the following points: she has had one convulsion, the amount of urine is decreasing, the edema is not decreasing, the blood pressure is high in spite of elimination treatment and veratrum viride.

The danger to the mother and to the child should she have more convulsions was carefully explained to the husband. Both the husband and the wife chose to take the added risk for the sake of the baby with the hope that palliative treatment would tide her over the present emergency. I agreed to this with the full understanding that they assume the risk and it was not my advice.

A flannel nightgown was put on the patient and she was to be kept between blankets and surrounded with hot water bottles. Three times a day added efforts were to be made to induce sweating. She was ordered veratrum viride ten minims by mouth every four hours and if pulse drops to 60 to stop it. Milk and water only to be given her. The twenty-four hour amount of urine to be measured and also the amount of fluids ingested. Bowels to be moved freely by divided doses of Epsom salts.

January 13. Telephone from the physician this morning saying that yesterday the patient had had a good day, that she had voided in twenty-four hours twenty-eight ounces of urine and that her bowels had moved five times but that this morning she was complaining of a headache and that it steadily was getting more severe; she had passed but six ounces of urine in the past ten hours and that the edema had increased. I advised him to give her at once one-quarter of morphia subcutaneously and to prepare her for delivery as soon as possible.

I arrived at the hospital at noon. The patient is clear mentally. The edema of the face and hands has increased. She is complaining of terrific frontal headache. No flashes before her eyes and no epigastric pain. Blood pressure is 180. She has voided no more urine and the bladder is not distended. Her bowels have moved three times. She has not vomited. The husband and patient agreed at once to delivery and as preparations were completed she was at once etherized. The operating room was very warm and the patient covered with blankets. Lithotomy position. Perineum dilated. Cervix admitted two fingers and on attempting to dilate it, it was found to be very rigid. I at once abandoned the idea of combined mechanical and manual dilatation and decided upon vaginal Cæsarean section. This was quickly done. The only difficulty was that I did not at first find the line of cleavage between the bladder and uterus. As soon as this was developed the remainder of the operation went smoothly as I had taken with me an assistant. The baby was lying in the right posterior position. With the left hand the occiput was rotated anteriorly and forceps were then readily applied. Delivery was accomplished without difficulty. The baby was alive and weighed on estimate about five pounds. It was at once put into hot water, after clamping and cutting the cord, and it soon began to breathe regularly and then to cry. It was given to a nurse who oiled it at once and did it up in absorbent cotton. Heaters were put about it. During the delivery the patient's blood pressure dropped to 160. There was practically no bleeding and ten minutes after the delivery of the baby the

placenta was expressed. Even then there was no bleeding. The incision in the anterior uterine wall was at once repaired and she went off the operating table with a pulse of 110 in excellent condition. Before she came out of ether her stomach was washed out and two ounces of a saturated solution of Epsom salts left in. Before I left she was out of ether and was sweating profusely. She was restless and was given morphia gr. 1/6 subcutaneously.

January 14. Telephone this evening from the physician saying that the patient in the first twelve hours after delivery had passed fifty ounces of urine. The edema had become much less. She had no headache. Temperature was normal and pulse 80. Bowels had moved and she was in excellent condition. The baby was alive and was taking milk well from another mother.

January 18. Saw the patient this afternoon. She has made an excellent convalescence. There is no edema of the face, hands or legs present. The patient is bright and cheerful. Her blood pressure is 132 mm. of Hg. The breasts are full and hard. They have been massaged three times a day with hot camphorated oil. She has been given a teaspoonful of Epsom salts morning and night and has had two to three watery movements each day. She is passing from fifty to sixty ounces of urine but it has not been examined as it is contaminated with the lochia which is still profuse. The baby is not doing well. He is on a weak modification of milk but it does not agree with him. I advised that the salts be stopped and the mother's bowels be moved by licorice powder or cascara and an enema if necessary each morning. I suggested that the breasts be pumped out with the English breast pump every two hours and to use this milk for the baby. Up to now the patient has been on a liquid diet. Her diet is to be gradually increased daily with due regard to the conditions of the urine.

January 24. Telephone to-day from the physician and he says the patient has gone along splendidly without any setbacks. The baby steadily lost ground and died on the twentieth.

April 10. The patient comes to my office to-day. She

says she is feeling steadily stronger and now considers herself perfectly well. Her eyes bothered her considerably for some weeks after the delivery but now since she has had different glasses they are very much better. She has occasional headaches. Blood pressure is 130. Specimen passed in the office showed slightest possible trace of albumin. No casts found. There was not enough to obtain the specific gravity. Vaginal examination shows a slight bulge of the anterior vaginal wall on bearing down, and a slight tear of the perineum. Scar of the vaginal Cæsarean is solidly healed, no induration or tenderness present. Uterus is normal in size and position. Cervix shows a stellate tear present, due to the former bilateral tear and the recent vaginal Cæsarean incision. There is no tenderness in the pelvis and no vaginal discharge present. She asked about the advisability of going through another pregnancy and I told her she must wait six months at least after it is known that the urine is normal in all its characteristics.

Summary of the Toxemia of Pregnancy and Eclampsia.

The six preceding cases show typical histories of the toxemia of pregnancy. They show well what careful oversight of a pregnant woman will accomplish in warding off a threatening eclampsia (Cases 50, 51 and 52), and how desperately sick a woman who has no sufficient care during pregnancy may become (Cases 53, 54 and 55). The symptoms present in these cases are the usual ones that appear in toxemia of pregnancy. Headache is generally the first to manifest itself. Blurring of vision, flashes of light before the eyes and epigastric pain usually come later. The pain that Case 50 complained of in the region of the gall bladder I regarded akin to the epigastric pain as there were no physical signs present to explain it in any other way. Coincident with headache often is found edema of the hands and face. In fact it is not at all uncommon to find edema before the headache appears. Edema of the feet and legs of itself is not an untoward symptom as this usually is due to the obstruction to circulation on account of the enlarging uterus.

A return of nausea and vomiting in the latter part of pregnancy after it has completely disappeared must be always regarded with great suspicion. Had the physician so regarded it in Case 55 and not simply as an attack of "indigestion" he might, and not without hope, have carried this patient along to term without further development of the threatening eclampsia. Every pregnant patient who develops a headache must be treated as developing a toxemia of pregnancy until the most searching examination proves that it is not so. Careful analyses of the urine will show generally the beginnings of the toxemia. All pregnant patients, as already stated, should have their urine examined at least once in two weeks the last three months of pregnancy. If the routine advised in the hygiene of pregnancy were strictly carried out in all cases, the number of cases of eclampsia would be greatly decreased. A physician who has several cases of eclampsia develop in his practice each year is not doing careful work. This means one of two things: either he does not impress upon his patients the importance of care during pregnancy, or he does not appreciate the early signs and symptoms of an impending toxemia. It is quite evident the physician in charge of Case 50 did neither. If such a physician will not look after his own wife better than he did, what is the care worth which he gives his patients?

These are the clinical symptoms and signs that every physician must be able to interpret and act promptly upon. Not all physicians own a blood-pressure apparatus, yet no physician who attempts to look after obstetric cases should be without one, any more than he should attempt to practice medicine without a stethescope. The average blood pressure in a normal pregnancy is 120 mm. of Hg. and a steady rise is indicative of a toxemia. Very rarely are symptoms of a toxemia present without a rise in blood pressure. All of these cases showed it. In Case 50 the instrument was not used as it occurred before the present available ones were on the market. Occasionally one finds a patient with nothing on physical examination, but a high blood pressure, from 180 to 200 mm. of Hg. The risk such a patient runs in being allowed to

go on in her pregnancy, if by treatment it cannot be reduced, is great and the sooner she is delivered without undue shock the better it is for her. There have not been a great number of such cases reported as yet, and the best way to meet this condition is not agreed upon, but the risk such a patient runs is very great and one never rests easily until she is delivered.

The treatment of toxemia of pregnancy is without a question, elimination. To be of use the treatment must be vigorous, the more marked the symptoms the more urgent the need of elimination. But do not think for one instant that because the symptoms one moment are mild that they will so continue. Toxemia of pregnancy is the most treacherous disease there is, and when all apparently is progressing smoothly something will happen, we do not know what it is, — a convulsion follows — or one after another comes and the patient dies. A patient with a toxemia of pregnancy must be regarded as a dangerously sick woman. The reason for so regarding her, is because we know so little about this disease and because the treatment which appears efficient in one case is absolutely without avail in the next.

Elimination is obtained by the bowels, the urine and by the skin. All three means must be used. Except in the mildest cases the patient should be put to bed. Even in mild cases when the rise in blood pressure is twenty or thirty millimeters, then bed should be insisted upon. If the patient is put to bed in a flannel nightgown between blankets the skin becomes much more active.

There is no better cathartic for causing watery movements than magnesium sulphate in divided doses. The objection to this medicine is that many patients vomit it. The bowels must be thoroughly opened and if one drug will not accomplish it others must be quickly tried. Enemata to empty the lower bowel should always be given at first. Four ounces of glycerine given with a rectal tube is excellent. If the patient is unconscious after a convulsion, then croton oil two to four drops in sugar or butter placed on the back of her tongue may be given or elaterin gr. 1/6 subcutaneously.

Diuresis is best obtained by the forcing of large amounts of water. One word of caution must be given here. If the

patient is edematous this edema must be reduced before water can be forced. If she is edematous, salt solution under the skin must not be given, but if no edema is present then it may be given as rapidly as it is absorbed. If it is given under the breast the technique must be perfect, for infection following the giving of salt solution is a very serious error. Many times it may be given just as efficiently by the rectum without the added risk of infection. Many times I have irrigated, with salt solution or if this was not at hand plain hot water, the rectum and colon as far as the rectal tube will reach by means of two tubes before the patient has come out of ether after delivery. By doing this the lower bowel is thoroughly emptied and therefore more prepared to absorb the salt solution.

I have noticed it to be a clinical fact that in some cases, if large amounts of water are forced, not infrequently the blood pressure will remain elevated, even although elimination is apparently sufficient. In such cases the amount of fluids ingested must be restricted.

Diaphoresis before delivery can be obtained by a hot tub bath. If there is any cardiac complication this means must not be used. The same may be said of the hot wet pack or of the hot air bath. I practically never use the hot air bath and only very rarely the hot wet pack, for if patients will not perspire covered with blankets and surrounded by heaters it has been my experience that they will not with the other means. Pilocarpine must under no circumstances be given to these patients for it is a much too dangerous drug to use.

These are the means to produce elimination whether before the delivery or after delivery. If one does not believe in the emptying of the uterus in serious toxemic cases or when actual convulsions occur it will be unnecessary for him to master the details of the various operations used where the immediate emptying of the uterus is demanded. There is a wide difference of opinion in regard to the immediate emptying of the uterus when convulsions have occurred. Some excellent physicians in this country and abroad favor the palliative treatment. Other equally able men demand

that the uterus be emptied as soon as a convulsion occurs. Each set of physicians report recoveries from both methods of treatment, the palliative and the operative, and one who has been so fortunate as not to meet many cases of eclampsia does not know what to believe. The truth of the matter it seems to me is that we all are groping about in the dark, hoping to find out the fundamental cause of eclampsia and then to treat it rationally. Unquestionably the best authorities are agreed that the treatment of the toxemia of pregnancy, whether we know its underlying cause or not, is elimination. If this treatment is to be effective it must be vigorous from the first sign of toxemia that occurs. If improvement follows and the troublesome symptoms disappear, no question of emptying the uterus will arise. Case 51 is an excellent example of attempting to carry a patient along to full term with a toxemia present. The mistake, if one can call it a mistake, in this case, was in allowing the patient to go home the first time from the hospital. The reason I allowed her to do so was that she was so very unhappy at the hospital and that she said she would carry out to the letter my orders. It was a risk to take but not a grave one. The toxemia became more marked and then the question was whether to palliate or to induce labor. I am confident in such cases where the improvement is variable it is much safer for the mother and baby to empty the uterus before the toxemia runs to an eclampsia. If any one can tell what any given toxemic case will do the next twenty-four hours then we could say what treatment had best be carried out, but no one can. It is a disease of the greatest uncertainty. We know it is a disease caused by the pregnant condition, hence it is rational from our present knowledge, or lack of knowledge, to terminate the pregnancy because of our uncertainty of what each succeeding day may bring forth. If the untoward symptoms do not clear up under efficient treatment, then empty the uterus before the patient has a convulsion. At the present time, the most efficient way to induce labor with the least amount of shock is to place a rubber dilating bag within the os uteri. Cases 50 and 51 were started up in labor this way. There is practically no shock

in the deliveries carried out in this way. Both made excellent convalescences and both children lived. This method very rarely fails to start up labor, especially if the tube of the bag is pulled upon regularly.

Packing the cervix and vagina with gauze or the insertion of bougies in the uterus after rupture of the membranes have, in my hands, given very unsatisfactory results and now I never resort to their use.

If you cannot start up labor and you are certain the patient should be delivered, other means must be considered. Either dilatation of the os uteri by the hand or by a mechanical dilator, or one of the cutting operations must be resorted to. The shock from manual or instrumental dilatation not infrequently is alarming. The tears that come from a hurried divulsion may be extensive and death may occur, in reality from the hemorrhage of a ruptured uterus, but if an autopsy is not obtained the cause often is recorded as eclampsia.

If the patient about to be delivered is a multigravida, many times a manual dilatation can successfully be done without undue shock. The same is true of some primigravidae. Whether a given cervix will dilate readily or not is always a problem. In Case 55 the cervix felt as if it would dilate readily, yet when the patient was under ether and an attempt made to do it manually it was very rigid. I then did a vaginal Cæsarean section without difficulty. In a primigravida with the cervix uneffaced and the os uterus undilated, some kind of a dilator must at first be used until two fingers can be pushed through the os uteri. The mechanical dilators are powerful instruments and in any but the most careful hands, extensive lacerations may be caused. Even in the most careful hands lacerations of the cervix will at times take place, but if slow dilatation is obtained and not a rapid divulsion the results will be good.

The objection common to all mechanical dilators is that dilatation takes place from outside when nature dilates the os uteri from the inside. By this means nature is in no way imitated, while with the Voorhees bag the process is much akin to nature, but the progress obtained by this method is sometimes slow.

Vaginal Cæsarean section is where the cervix and anterior uterine wall, after the latter is freed from the bladder, is cut sufficiently so that the child in the uterus can be delivered without further tearing of this incision. It is not an operation for the tyro to attempt. It may be very difficult and the damage possible to the mother's organs by careless operating is too great to subject the woman to. The shock from a vaginal Cæsarean section is very slight. It can be done rapidly. At times the bleeding from the lower uterine sinuses may be severe, but if not excessive, such bleeding in eclampsia is to be desired.

In the past few years many writers have advised delivering eclamptic patients by an abdominal Cæsarean section. In a few well picked cases I believe Cæsarean section is permissible. One dislikes to place an added strain on organs already somewhat damaged. Unquestionably the kidneys in eclampsia are damaged by the toxin and a further strain may be the turning point of the case. In Case 53, Cæsarean section was done not by election but by necessity. The difference is great. If by necessity we are forced to do something which under other conditions would be unjustifiable and obtain a good result, are we then justified by a few such cases, to recommend for the treatment of eclampsia in all cases as an elective operation a procedure which we recognize carries with it an added risk to the patient already dangerously ill?

The patient delivered, the after treatment is as important as the delivery itself. A patient delivered is by no means out of danger. A great gain has been made. Careful nursing now is essential. No patient with eclampsia should be delivered at home unless efficient nurses can be had. The hospital is the ideal place for the eclamptic patient. Unless the patient has the means to command all the necessities for the efficient treatment of this condition, the physician must insist that she go to a well-equipped hospital.

As the treatment before delivery was elimination, so it is after delivery. To the treatment already advised, bleeding may be added. If the patient continues to have bad symptoms after delivery, with a high or rising blood pressure, then bleed her. Case 54 shows well the value of such treatment.

Within a few days I have seen a patient who had had some six or eight convulsions before delivery and ten hours after delivery began again to have them. In the next twelve hours she had fifteen convulsions. I saw her have two in rapid succession and advised that she be bled at once. Twenty-five ounces were withdrawn from the median basilic vein. The blood pressure dropped from 165 to 110. She became quiet, her pulse though rapid, 120, was good. In about eight hours she became conscious. She had no more convulsions and from then on made an excellent convalescence. This is not an exaggerated picture of the effect of bleeding the patient. The same picture was seen in Case 54, but not so marked. The objection to bleeding is the lowering of the patient's power of resistance to infection. The objection to bleeding before delivery is the same plus the added danger of an operative delivery. One does not know how much blood will be lost at the delivery and if the patient has only very recently, a few hours before perhaps, been bled, this added loss of blood may be sufficient to kill her. I have never bled a patient before delivery and I know of no published series of cases where this has been tried out.

Combined with the eliminative treatment goes the giving of morphia subcutaneously in sufficient amounts to bring the respirations, at least, to ten per minute. Gradually as the hours pass after the delivery is over, and the patient's condition improves, the amount of morphia given is diminished. Drugs have little effect on the lowering of the blood pressure. As the toxin is eliminated the pressure gradually falls. If it stays up for some weeks after delivery and the urine fails to clear up, then permanent damage of the kidneys must be suspected. (Case 50.)

The diet in these toxemic cases should be milk only for at least forty-eight hours after delivery. If then the patient makes a steady improvement, gruels and soft solids may be added; with each addition of food the urine and the patient's general condition must be watched.

Eclampsia and placenta prævia are the two most fearful obstetric complications which a physician must meet. The latter is an accident and the physician has no control over it.

In too many cases the former is due to ignorance or wilful neglect on the part of the physician. Carefully watched patients with whom the hygiene of pregnancy has been gone over and who do what they are told rarely develop eclampsia. They will develop in spite of efficient care slight degrees of the toxemia of pregnancy. Rarely will such cases go on to convulsions, for if the treatment is efficient the symptoms will disappear, and if they do not, the patient should be delivered before a convulsion occurs. Unfortunately this cannot always be accomplished and in spite of the most careful watching and treatment a few patients will have convulsions. The risk a patient runs in being carried along further in pregnancy while a toxemia is present is real, but how great the risk is no one knows and we have as yet no accurate way to determine what this danger is.

Babies of eclamptic mothers often do poorly, many are premature, and not a few are lost in the delivery. I believe all eclamptic babies should be given a teaspoonful of castor oil shortly after birth in order to get rid of all possible absorption of the toxin that may be present. An eclamptic should not be allowed to nurse her baby unless she rapidly recovers from her illness. The reported deaths of babies shortly after nursing from eclamptic mothers makes one question the advisability of allowing a baby to nurse its mother when an eclampsia has been present. Even because of these few reported deaths, striking cases as they were, I am not ready to say that all eclamptic mothers should not nurse. I have seen many babies nurse from mothers who have had eclampsia, with no bad results. If the eclamptic symptoms rapidly disappear with proper eliminative treatment, I can see no reason why the baby should not nurse. As an added safeguard I now pump out from the breasts the first of the milk that appears and do not give it to the baby. After this milk is withdrawn, and if there are no further contra-indications, I then allow the babies to nurse.

SECTION XIV.

FACE PRESENTATION.

Case 56. FACE PRESENTATION. CHIN POSTERIOR. INTERNAL PODALIC VERSION. My house officer reports the following facts: — That he has just examined a patient with a face presenting, that all his attempts to flex the head are unavailing and that he wanted me to see the case with him. I saw the patient at once. She is a Jewess, at term in her fourth pregnancy; the three previous labors were all normal. Labor began at nine this morning, the "waters" came away at ten o'clock and she sent for an externe shortly after. The externe found nothing abnormal until his second vaginal examination about three P.M. when he made the diagnosis of a face presenting. When I saw her at four the patient was having pains every three minutes which lasted a minute to a minute and a half. The uterus was soft and relaxed well between pains. On palpation nothing definite was made out because of the fat abdominal wall. Fetal heart was regular, at 150 to the minute in the left lower quadrant. The house officer said it had been 120 an hour previously. Vaginal examination confirmed the findings of the externe and house officer. The irregularities of the face were readily felt and the chin was found posteriorly in the right oblique diameter. The os uteri was fully dilated. The head was small and it was not firmly engaged in the pelvis. I readily flexed the head by pressure upward on the brow while with my right hand I pressed in and downward on the occiput. The moment pressure on the brow was lessened the face again presented. As the fetal heart had increased in rate I again listened to it and found it to be very irregular. I therefore advised the patient to take ether and let us deliver her. She accepted the advice. As soon as preparations were completed the patient was etherized. The perineum had been badly lacerated from previous deliveries and dila-

tation was accomplished very quickly. The left hand was passed through the cervix and about the neck were felt three loops of cord and beyond were many others. With the usual technique a version was readily done and as the baby was delivered a loop of cord was seen about its body and under each arm. The cord was not pulsating when the baby was born. The baby's heart was beating regularly but slowly. The cord was at once clamped and cut and the baby readily resuscitated. Fifteen minutes after the birth of the baby the placenta was delivered intact with all the membranes. The cord was measured and found to be fifty-eight inches long. The baby weighed five pounds and four ounces. The mother made an absolutely normal convalescence, temperature never rising above 99° or the pulse over 80. She nursed her baby and it did well. Both were well on the tenth day and were discharged.

Case 57. FACE PRESENTATION. CHIN ANTERIOR. INTERNAL PODALIC VERSION. August 26th. Telephone from a physician at quarter past ten this evening saying that he now had a patient in labor who two years ago was delivered by a hard operative delivery, of a stillborn baby. That now there was a face presenting. That she was in active labor. He wanted me to see her at once with the question of performing a Cæsarean section. I went at once, to the hospital where she was, and obtained this further story from the physician-in-charge. At the previous delivery he had started to operate with the head high and the cord prolapsed. He continued operating by forceps and lost the baby which is said to have weighed nine pounds. Mother had severe tears but made a good convalescence. Present pregnancy was not remarkable. She ruptured her membranes at six o'clock this afternoon and pains immediately started. The physician-in-charge was out of town when the pains began. Another physician saw her for him. This physician at that time examined her but could not make out what the presentation was. At eight o'clock her own physician examined her and found a face presenting. The chin was anterior, the cervix was partially taken up and the os uteri dilated about one inch. He brought her at once, without a sterile pad on, some six miles in the automobile, to the hospital.

When I saw her she was in excellent condition. Pulse 80. Palpation showed definite small parts on the left. Back on the right. By the fourth manœuvre fingers of the left hand went down in the pelvis very much further than did the fingers of the right hand which were held by the occiput. The uterus relaxed well between pains. The baby weighs about seven pounds. Vaginal examination at 11:30 showed the os very thin and dilated two and a half inches. A marked gain in a little over three hours from what the physician-in-charge had found. Irregularities of the face were evident. Chin was anterior and to the left of the median line making it an M. L. A. Promontory can just be reached. The contour of the pelvis is apparently normal. The spines of the ischia are very prominent. The arch is a little narrowed and with difficulty my closed fist can be pushed between the tuberosities.

I was convinced that there was sufficient room in the pelvis for the baby to come through. I therefore tried to flex the head but was unsuccessful.

The physician-in-charge, as was the patient, was anxious for a Cæsarean section, but I advised against it for the following reasons: — First, she has had ruptured membranes for five hours; she had been examined by one doctor without sterile gloves and by two with gloves; she had been brought down at least six miles in an automobile without a sterile pad on with a very relaxed introitus. I felt that the present baby could be brought through without difficulty by an elective version when full dilatation was obtained, if she were unable to push the face as such into the pelvis. The patient still favored Cæsarean section even after I talked with her but on talking with the husband I made it clear to him that the danger of sepsis if a Cæsarean section were done was great and I again advised strongly against it. My advice was accepted and the patient continued in labor. At 12:30 A.M. palpation showed practically no difference in the height of the head. At this time the patient began of her own free will to bear down. At quarter-past one I again examined her and found she was fully dilated but the head had made no descent. I then advised operation and it was accepted. Preparations were immediately completed. Patient was scrubbed up carefully as already described. Under ether the patient was catheterized. Vaginal examination showed the os fully dilated. Position M. L. A. Marked edema of the face and brow present from palpation.

In going up into the uterus with my right hand I came upon a definite retraction ring which, however, was not at all tight and needed no dilatation. The anterior leg was sought for and found and version begun. With excellent aid by my assistant, the version was readily performed. There was no difficulty until the perineal arm was sought. This was extended and only after several attempts was it swept down over the face and out. The anterior arm was only partially extended and it was delivered from its anterior position readily. There was but little difficulty with the after-coming head. The baby's heart was beating regularly and well and

its color was excellent. The cord was not pulsating and therefore was clamped and cut. The baby was given to the assistant to resuscitate but before he put it into the hot water, it gave its first cry. Inspection of the perineum showed a slight internal tear on the left which was at once repaired with chromic catgut. The placenta was delivered intact with its membranes a short while later. There was no bleeding and the patient was at once put back to bed in excellent condition. The baby was carefully looked over, no bones were broken, and the arms were moved normally.

Two weeks later the physician telephoned that both mother and child were at home and in excellent condition.

Summary of Face Presentations.

Anything which interferes with the flexion which is so essential to the normal mechanism of labor may cause a face presentation. In the first case recorded the loops of cord about the neck prevented flexion and my attempts here to flex the head on the chest interfered with the circulation in the cord as shown by the irregularity of the fetal heart. In the second case the position was originally an O. D. P. and in the course of the labor the biparietal bosses were probably held up by the slightly narrowed pelvis with the resulting extension. In the first the chin was posterior, in the second anterior.

The treatment of all face cases, if they are seen early enough in labor, is to attempt to flex the head in order to convert the face into an occipital presentation. With the hand in the vagina, many times the change can be accomplished, but sometimes the moment the pressure is removed from the face or brow, extension again takes place. Simple flexion is not sufficient; the poise of the child in the uterus must be changed and this is attempted by external manipulations. Illustrations in the various text books show these manipulations much better than they can be described. If the uterus is tightly contracted about the baby, external manipulations will be of no avail.

If the chin is anterior and labor progresses well, the case

may be left alone, but if progress is not made delivery must be undertaken. Here again the time to operate is when both mother and child are in good condition. If the chin is posterior and unengaged with the os uteri fully dilated, version should be done at once, provided flexion, as already spoken of, cannot be obtained. If a chin posterior position is found with the chin on the pelvic floor, many writers advise unhesitatingly to perforate the skull. That is scarcely justifiable at first. Attempt must be made to rotate the chin anteriorly manually or if this is unsuccessful, by forceps. This latter, however, is a dangerous procedure. If the patient is not in hard labor and the uterus is soft, one may attempt to push the head up out of the pelvis slowly and then perform a version. A few cases of persistent chin posterior positions have been successfully delivered by pubiotomy. If the child is dead, then, of course, a craniotomy should be done.

In these two recorded cases version was the operation of election. In the first the danger of pinching the cord by the forceps was great. In the second the slightly flattened pelvis made a version the operation indicated.

If the head can be flexed and held by an assistant so that forceps can be applied, a forceps delivery may be done. Under any circumstances careful watch must be kept on the progress of the labor to see that no untoward symptoms arise.

If there is no disproportion between the pelvis and the baby and steady progress is made with the chin anterior, there is no indication to operate. A face presenting does not of necessity demand operative interference. But it must be remembered either complete extension or complete flexion of the head is essential for the mechanism of labor to be carried out.

SECTION XV.

TRANSVERSE PRESENTATION.

Case 58. TRANSVERSE PRESENTATION. INTERNAL PODALIC VERSION. My house officer telephones to me saying he had just seen a multipara in her fifth labor with a transverse presentation. She was in fair labor and the membranes had been ruptured eight hours. I arrived at the patient's house July 27th at 12:30 A.M. She was at once recognized as a patient I had seen previously many times in my Dispensary work. She greeted me with the remark that "you can't do anything until you give me ether and I won't get into that position for anyone." The explanation of this remark was that at the last delivery the house officer kept her on the edge of the kitchen table in Walcher's position for, she says, four hours, and that ever since she has had much pain in her back, all of which she lays to the position in which she was kept.

Examination of the patient showed the uterus was contracting hard every three minutes and the pains were of one minute duration. The normal contour of a full term pregnancy was absent. The transverse diameter of the uterus just above the pelvis was much increased and the epigastrium was flat. The patient had a flabby pendulous abdominal wall. Through it the head was readily palpated on the patient's left, lying in the left iliac fossa. Smooth resistance was made out anteriorly with the buttocks on the right. Irregularities and fetal motion were felt at the fundus. The fetal heart was not heard. Uterus was soft between pains and not tender. Patient's pulse was 80 and she was in excellent condition.

VAGINAL EXAMINATION: — Previous severe perineal lacerations. Marked blueness of the vagina and prominent vulval varicosities with slight edema. The os uteri is fully dilatable and very thin. At the brim is a sharp bony prominence which is movable. Palpation of this prominence showed it undoubtedly to be the elbow, flexed and the forearm was

running towards the patient's left. At the right of the median line was found a large foot, heel at the right and toes pointing downward and to the left. Clear liquor was coming away. I advised the patient to be etherized and delivered. She readily assented. The preparations were completed and when everything was ready, including a pail of hot water to resuscitate the baby, she was etherized on the bed. The reason she was not put on a table was that there was no table in the house strong enough to hold her safely. The legs were held by two women friends. When the patient was under ether the vulva was thoroughly scrubbed up with soap and water and then washed off with corrosive sublimate 1–3000. She previously had been shaved. The perineum dilated up, on account of the severe previous lacerations, very readily and the cervix was then dilated carefully by the hand until the whole hand could readily be pushed through the cervical ring which was felt, up to now, to be intact. The closed fist, made as large as possible, was slowly brought through the cervix four times and the last time there was practically no resistance offered. The forearm and hand of the presenting right arm was now brought down and a fillet quickly put on this wrist. The end of the fillet was held up and out of the way by the house officer. The foot which was also presenting was now seized with the right hand and the etherizer was told to draw up on the head which was at the left while traction downward was made on the leg. The head at once swung up into the fundus and as it went up the right arm with the fillet on it went up into the vagina. Traction on the right foot brought the right buttock down as the anterior. The bistrochanteric diameter of the baby engaged in the right oblique diameter of the pelvis. Traction downward on the leg brought the posterior buttock to the perineum and with the finger of the left hand in this posterior groin the buttocks were slowly delivered. The posterior leg, the left, was fully extended. The body delivered slowly, and the extended leg was freed, remembering carefully its anatomy. The bisacromial diameter held in the right oblique diameter. Traction downward combined with lateral flexion brought the angles of the scapulæ into view. Traction which up to now had been but

slight on the fillet was increased and this arm and shoulder readily delivered. The body was now drawn to the operator's right and raised up. With the operator's left hand the posterior arm was sought. It was not extended and very readily was swept down over the chest wall and out. The body was now put across the right forearm with legs hanging on either side, the left hand placed over the baby's neck at the occiput and with traction downward combined with excellent suprapubic pressure the head was delivered on the second attempt. The baby gasped at once and very shortly cried. The cord was clamped and cut. There were no fresh tears of the perineum. There was no more than normal bleeding. The placenta was delivered intact with all the membranes, half an hour after the baby's birth. The house officer gave an intra-uterine douche of sterile water and followed it with a pint of 70% alcohol.

The patient was in excellent condition as was the baby. The baby was found to weigh ten pounds. The patient made an absolutely normal convalescence, and got out of bed the ninth day. She refused a vaginal examination and was discharged from the hospital care on the twelfth day, both she and the baby well.

Summary of Transverse Presentations.

This case is an excellent example of a transverse presentation. If transverse presentations are seen at the onset of labor an attempt may be made to rectify the presentation by external manipulation. If this is successful then the case is managed as any normal case, with one possible exception. If there is a tendency for the transverse presentations to recur then a firm abdominal binder, with pads on either side of the fetus, should be put on. King's method of pressure by the flexed thigh may be tried. In transverse presentations the labor may be slow, the membranes may rupture early and a small part or the cord may prolapse. Constant supervision when the fetus is lying transversely must be given by the physician and preparations for immediate operation must be completed early in the labor. If the pains are strong and frequent

and no dilatation is accomplished, then a Voorhees bag should be inserted. As soon as it comes out then an internal podalic version is the operation of election. The danger in a transverse presentation to the mother lies in the fact that an operation, almost certain to be necessary, is put off too long, not infrequently until the uterus is tonically contracted about the child. The danger to the child is because deep asphyxia consequent upon a prolapsed cord or a hard operative delivery so often occurs. Properly managed transverse presentations should show no maternal mortality. The fetal mortality depends largely upon the skill of the physician and the willingness he shows to operate early. In operating early I do not mean that the patient should be dilated up from nothing and at once delivered, for the shock consequent upon this procedure is great. If progress is made, then as soon as the os uteri is fully dilatable delivery should be undertaken. If the patient is a primipara with rigid soft parts and there are no contra-indications, a Cæsarean section is justifiable, especially so if there is a disproportion between the fetus and the pelvis.

If an arm is prolapsed then a fillet, or sling as it is often called, should be placed about the wrist. To one who has never made use of a fillet on a prolapsed arm the great aid it gives in the delivery of the arm is most surprising. A fillet may be made out of any strong piece of cotton cut two inches wide and five feet long. It is folded into a slip noose and then passed over the hand and drawn tight. The reason for having it so long is that when doubled and slipped over the hand it must be long enough so that as the version is done and the arm goes up into the vagina the end of the fillet can readily be held outside of the vulva and away, so that it will not be in the operator's way.

To sum up in a few words the management of a transverse presentation, — if progress in the dilatation of the os uteri be satisfactory, simply watch the fetal heart but be prepared to operate. If progress is unsatisfactory put in a Voorhees bag. Under all circumstances deliver the patient as soon as the os uteri is fully dilated and do not wait and hope for a spontaneous version.

SECTION XVI.

SEPSIS.

Case 59. PUERPERAL SEPSIS. July 16. Patient ruptured her membranes this morning at 11 o'clock and labor started at 7 P.M. this evening. During the night pains came at from three- to ten-minute' intervals, lasting fifteen to forty-five seconds. At six o'clock, July 17, vaginal examination showed that the cervix was entirely taken up, and admitted one finger. She was at this time very fretful, not bearing her pains well. Her pulse had gone from 80 to 96. She was given ¼ gr. of morphia subcutaneously. From now until after eight o'clock she was quiet but the pains continued of the same character. At half-past eight they changed and began coming rapidly every three minutes and lasting one minute. Rectal examination at half-past nine showed the head on the perineum. Os fully dilated. Fetal heart listened to but was not obtained although the nurse had obtained it half an hour before. Preparation for immediate delivery was made and a simple low forceps was done but the baby was born dead. Twenty minutes later the placenta was delivered intact and there was a question whether some of the membranes were not retained. There was no bleeding. Her pulse was 100 after delivery. Her blood pressure was 130.

July 19. Temperature this afternoon 100.6° and pulse 100. Uterus at the level of the umbilicus and lochia scant. Ice bag put to the fundus and half a dram of ergot and half a dram of hydrastis given. Patient was raised up on pillows and was urged to roll over on her stomach to favor draining.

July 20. Temperature 99.6°. Pulse 96. Uterus is two finger breadths below the umbilicus. Aside from the fact that the uterus still is large her condition is satisfactory.

July 21. Temperature this morning 99.2°. Pulse 84. Uterus is slightly tender. Lochia is not free, no odor. Ice to the fundus is continued.

July 22. Temperature this morning 99.2°. Pulse 84. At one o'clock this afternoon she felt chilly all over. No real chill. Temperature 102°. Pulse 96. In view of the fact that the uterus was still large and the lochia was scanty it was determined to dilate the cervix, and there escaped a considerable amount of thick, brownish foul smelling lochia. The uterus was explored with a curette but nothing was obtained. Uterus then washed out with salt solution followed by 70 per cent alcohol.

July 23. Temperature this morning 100.2°. Pulse 100. Fairly comfortable night. Some headache. Is aching all over. Does not feel like eating anything. She does not look sick. Uterus is still large. There is no abdominal distension. No tenderness anywhere. Temperature to-night is 101° and pulse 100. She is now outdoors night and day.

July 24. She had a chill early this morning and temperature at eight was 103°, pulse 140. Face is slightly flushed this afternoon. Abdomen is slightly distended. Uterus is three finger breadths above the symphysis. No abnormal sounds in the heart. Temperature to-night was 101.4°. Pulse 110.

July 25. Temperature this morning was 97° and pulse was 68. At 11.50 she had a chill which lasted for ten minutes and pulse went to 144 and temperature to 104°. Physical examination shows nothing different from the previous note except that she looks very much sicker. Skin is dry and she is eating only fairly well but drinking well. Bowels are moving well. Temperature to-night 102.6°. Pulse 140.

July 26. Previous notes were made by the physician who was in charge of the case while I was out of town. I saw her to-day at his request. Temperature this morning was 99.2° and pulse 90. She had a good night last night and felt very much better early this morning but at 9.25 she had a slight chill which lasted ten minutes. Half an hour later temperature rose to 104°. Pulse 140. She reacted from this chill very much more quickly than she had from the previous ones and began perspiring within ten minutes and in a short time became comfortable. Physical examination to-day shows no

distension of the abdomen. No tenderness anywhere. The fundus cannot be felt. She is draining profusely and the pads are very foul. She was smiling and very bright and said that her appetite was very much better than it had been any day previously. Her temperature to-night was 100.2° and her pulse was 110. She is still out of doors on the piazza all the time night and day.

July 27. She slept well last night and has had no chill since yesterday morning. Temperature this morning 97.8° and pulse 84. She asked this morning for more food and seems much brighter and happier even than yesterday. This afternoon she had a chilly sensation but no real chill. Temperature taken half an hour after this chilly sensation and it was found to be 104° and pulse of 120. She had no headache after this chill and no profuse perspiration.

July 28. Temperature this morning 99.2° and pulse 96. Had an excellent night and slept six and a half hours. Highest the temperature got to-day on four-hourly chart was 102.2° and pulse 106. Even with this temperature she was very comfortable, was eating well and there are no untoward symptoms.

July 30. Temperature has been normal all day. Pulse not over 90. General condition is rapidly improving. Lochia is still foul but less profuse.

August 3. Steady improvement though the temperature rises at night in the neighborhood of 100°. Pulse steadily dropping and for the past two days has not been over 80.

August 10. Patient has made a steady and rapid convalescence. Now has absolutely no discharge from the vagina. Absolutely no tenderness anywhere. She is to get out of bed to-morrow for the first time.

August 14. Has been gradually moving around the piazza. No untoward symptoms have developed. Condition in every way satisfactory.

August 16. She is to go home this afternoon from the hospital. Examination shows perineum well healed. Cervix has very slight bilateral tear. Uterus normal in position and size; freely movable. Nothing can be felt on either side. No tenderness whatsoever in the pelvis.

Case 60. UTERINE SEPSIS. This patient is seen in consultation August 6th. The history as given by the physician-in-charge is as follows: — The patient, a primipara, had a normal pregnancy in all respects. Labor began at six o'clock the morning of August 4th and progressed normally. Shortly after midnight on August 5th the membranes ruptured and from then on she made good progress and delivered herself at half-past one of a six and a half pound baby. Placenta followed in half an hour and was intact with all the membranes. There was a slight median tear which the physician repaired with one silkworm-gut suture. When the physician left the patient two hours after the delivery she had a normal temperature and a pulse of 64. Late in the afternoon of August 5th the patient had a temperature of 101.6°, pulse of 100. He found no explanation of this rise in pulse and temperature. At noon time to-day, August 6th, he found her temperature 103.4°, pulse 126, respirations 40. I saw her at five P.M. and she then had a temperature of 103°, pulse 120, respirations 36. Her face was flushed but she did not look sick. I was unable to obtain any history of illness just previous to her delivery. The physician said he had made but two vaginal examinations during the labor and that as far as he knew he had carried out the technique he always used with previous good results. He is confident that all the membranes and placenta came away. Physical examination: — Heart and lungs negative. Breasts are soft without lumps or tenderness. Abdomen slightly distended and tympanitic except over the uterus. No tenderness in either kidney region. Spleen not palpable. Uterus palpated one inch below the umbilicus. It is soft and distinctly tender. No deep tenderness on either side of the pelvis. Examination of the pad then on the patient showed very slight amount of discharge, red in color but very strong odor, almost foul. Further questioning brought out the fact that the patient since delivery had flowed very little.

The diagnosis of retained lochia with sepsis was made and I advised that the cervix be dilated, that a teaspoonful of ergot be given every three hours for four doses; that an ice-

bag be put to the fundus; that the patient be propped up in bed and that her bowels be freely opened.

The physician-in-charge later dilated gently the cervix under aseptic precautions with a Goodell dilator and reported that much foul smelling lochia at once came away.

August 7. To-night the physician reports the afternoon temperature was 101°, pulse 100. Uterus is distinctly smaller, less tender and more firm. Lochia is profuse and foul smelling. Patient is eating well and slept well last night.

August 10. Physician reports that two days ago the temperature was 100° in the afternoon but since then it has not been over 99.8°. Pulse has gradually dropped and to-day is 80. The uterus is involuting well and the lochia is rapidly improving in odor but still is profuse and gradually becoming lighter in color. The further history of this patient was that she made an excellent convalescence, nursed her baby and gradually resumed her household duties.

Summary of Treatment of Sepsis.

It is impossible except in very many cases to give an adequate picture of puerperal sepsis. The two cases that I have given are typical. In Case 60 the onset was more rapid than usual for that type of sepsis. In Case 59 the onset was slow until the intrauterine manipulation took place, then the infection was rapidly spread.

The two symptoms common to all forms of sepsis are an increase in the pulse rate and a rise in temperature. Any rise in temperature and pulse in a puerperal patient must be regarded at the outset as uterine sepsis in one of its various forms until by careful, intelligent physical examination it is proved that the cause is outside the genital tract.

In not a few of the cases here recorded there has been a temperature during some part of the first three days. All of these cases have been regarded as septic until it was proved that the cause was not sepsis. In a few of them unquestionably the temperature was due to the absorption from some of the tears that had taken place. It is hardly fair to regard these cases as showing a puerperal sepsis for the

temperature in none of the cases was but of fleeting character.

If physicians would take this stand and admit the presence of sepsis when it is present, a tremendous gain in the practice of obstetrics would be made. Any physician may have sepsis occasionally. For these rare cases he is not to be blamed unless he has wilfully or carelessly broken the definite surgical technique that must be carried out in every obstetric case. At the present time it is no credit for a physician to go through years of hard operative work and not obtain sepsis. It simply means that he has lived up to the best teaching of our times. But if a physician has every once in awhile a case of uterine sepsis he is to be severely condemned, for his technique unquestionably is wrong in some respects.

As constant as is the rise in pulse and temperature, so are the other symptoms as variable. The presence or absence of a chill is no absolute criterion of the severity of the infection. A chill the first twenty-four hours usually means a severe infection. Case 33 had two chills. The first undoubtedly was due to the breast infection while the second was due to the septic perineum, yet the patient made an excellent convalescence as soon as the perineum was opened for drainage. Headache of varying severity is very common. Pain in the lower abdomen is most variable while tenderness on palpation over the uterus is present in the great majority of cases. Accompanying the tenderness over the uterus is found an alteration in the involution which normally should take place. The uterus where sepsis is present involutes more slowly and is usually distinctly softer than in a normal case.

In both Cases 59 and 60 the alteration in the involution of the uterus was present together with a change from normal in the lochia. The amount, color and odor of the lochia must be carefully investigated and any alteration noted. If a physician does not know what normal lochia is, he will be entirely at sea when he meets a septic case. These are the usual signs and symptoms of sepsis. The earlier they appear post partum, usually the more severe is the infection.

The patient's general appearance must be considered in every case of sepsis. Experience with sepsis leads one to form a more accurate idea of its severity than any one sign or symptom.

No word on the treatment of sepsis would be adequate unless its prevention was first insisted upon. I have already gone over the care during pregnancy and the conduct of labor and the technique to be employed. The patient's resistance must be brought to the highest point of efficiency and in order to do this the physician must have careful oversight of the patient the entire duration of pregnancy. Physicians must regard an obstetric case as a surgical procedure and all patients must be educated to realize that the safeguards that the best obstetricians throw about relatively few women are not without reason. If the technique, as already described for the delivery of the cases, is followed out in all respects, then sepsis will disappear. No one part of the technique can be omitted in any case. It is all essential to the patient's welfare.

In the actual treatment of uterine sepsis there still is wide variation in what is advised. The pendulum at the present time unquestionably has swung far to conservatism; the results obtained are surely as good, if not better, than from the radical, the operative treatment.

Conservatism in the treatment of puerperal sepsis is shown by Case 60, except in one respect and that is in the use of the dilator. To have carried out consistently the conservative treatment the dilator should not have been used, but the picture was so complete of retained lochia with sepsis that I felt it best to give this retained lochia an opportunity to come away quickly, and the flow that came, following the dilatation, justified fully its use. An ice bag to the fundus of the uterus constantly, ergot in dram doses every four hours, free catharsis and a good diet and sleep sums up the conservative treatment of uterine sepsis. Raising the shoulders helps materially in the drainage. Whether the patient is placed in the true Fowler's position or the body and shoulders simply raised on pillows makes but little difference.

The radical treatment of sepsis consists in curetting the

uterus and washing it out with either salt solution or sterile water. Many times after the uterine douche is given, a pint of 70 per cent alcohol is allowed to run in very slowly and what will is allowed to stay in the uterus and vagina. The douche should flow slowly and without force. The uterus is curetted either with a blunt curette or with the finger. It should be needless to add that any intrauterine treatment must be carried out with the most rigid aseptic technique. To give an intrauterine douche, good light is essential. The patient is best placed across the bed with legs flexed, her buttocks well on the edge of the bed. The vulva is washed off carefully with corrosive sublimate 1–2000 and a bivalve speculum exposes the os uteri. This is then wiped off with 70 per cent alcohol. The curette is then passed directly into the uterus touching no part of the vagina and the cavity lightly curetted. No attempt ever is made to curette to a solid base. The intrauterine douche nozzle is then passed after all air is expelled from the tube and nozzle. In giving a douche the physician must see that a sufficient return flow appears, otherwise some of the solution may be forced up into the Fallopian tubes. If the finger is used to curette it is passed through the os uteri after the vagina has been wiped out with either 70 per cent alcohol or corrosive sublimate 1–5000. I do not like the use of the finger in uterine sepsis because one must go through the vagina and in doing so unquestionably will carry germs up into the uterus and also the finger is not long enough to reach the fundus of the uterus in by far the majority of such cases. The objection to the curette is that the uterus is so soft that the danger of puncture is very real and also that it opens up new avenues of attack for the germs which already are in the uterus. The latter to me is the more potent objection, for if a physician believes in curetting septic cases he must be able to do it without damage.

Case 59 shows well the bad results that may be obtained from curetting a puerperal uterus that already is slightly septic. This patient had a large uterus with retained lochia and the cervix was dilated and much foul smelling lochia came away. Not satisfied with that, the uterus was

then curetted and in a short time the damage that was done was very evident by the chills, the irregular temperature and high pulse that at once followed. Careful study of the notes on this case shows the characteristic ups and downs of a septic patient. Had the physician in this case stopped with the dilatation of the cervix and not curetted the patient, I am confident, and he is also, that she would not have gone on with the severe sepsis that followed.

In my own cases where I alone have examined the patient and am confident that the uterus is properly emptied I have never yet given any intrauterine treatment. This statement is of no credit to any physician, for if the proper technique is carried out all physicians should have the same result. It is permissible, if the diagnosis of sepsis is doubtful, to give one intrauterine douche at the onset, but to continue the use of douches when the diagnosis is uncertain and no improvement in the patient's condition follows is entirely unwarranted.

Bacteriological examination of the interior of the uterus, of uncontaminated lochia, is for the average physician out of the question. From a scientific point of view it is interesting but I do not believe the treatment is altered one iota by the findings from such examinations. Too many times have I found streptococci in lochia without symptoms in the patient. Clinical symptoms are of much more value than bacteriological findings. The use of vaccines either of the stock varieties or autogenous ones has, in the many cases I have seen, been unsatisfactory. It is true many brilliant results are recorded, but I have seen as many interesting recoveries take place from both the radical and the conservative methods of treating sepsis.

Case 60 shows clearly the conservative treatment. Before any treatment is begun a careful, complete physical examination must be made to be certain that there is no other cause for the rise of the temperature and pulse. If no sufficient cause is found outside the uterus then the uterus and its contiguous organs must be suspected as the cause. If, however, there are no localizing symptoms which point in the slightest degree to the uterus, then one must wait for further developments. Without localizing symptoms I do not be-

lieve it best to start intrauterine treatment under all circumstances. Conservative treatment may be begun at once on the chances that the rise in temperature is due to uterine sepsis, to be given up if necessary, when more definite symptoms in other organs arise.

The conservative treatment, as I have already said, consists in placing an ice bag over the fundus of the uterus, in the giving of an active preparation of ergot in dram doses every four hours, in the raising of the patient's shoulders to favor drainage and in opening freely the patient's bowels.

Radical treatment means intrauterine manipulations added to the conservative treatment. In all cases of sepsis the patient should be on a four-hourly pulse and temperature chart. Careful palpation of the abdomen must be carried out daily with vaginal examinations now and then in order to rule out the accumulation of any pus in the pelvis. A normal temperature and a dropping pulse for five days rules out almost certainly the presence of uterine sepsis. With a temperature hovering about 100° and a pulse that does not have the normal drop in rate after delivery, the probability of uterine sepsis must be kept in mind.

Food and fresh air must be given freely to a patient suffering from sepsis. The more severe is the sepsis the more essential is it that the patient be put out of doors. To those physicians who have never seen the results of out-of-doors treatment of sepsis, they are truly astonishing and well repay the effort that such treatment sometimes necessitates.

As much food of varied kinds as the patient can digest must be urged. High temperature is no contra-indication for a full diet provided the patient can digest the food that is given her.

If the patient is running a very high temperature, cold sponge baths give the greatest relief. The coal tar derivatives must not be used. Stimulation of the heart may be at any time indicated and in order that the heart condition is not overlooked careful frequent examinations must be made.

If there is much pain present with the sepsis, small doses of codeia may be used to obtain sleep. If there is no pain,

one of the simple hypnotics should be used to give the patient a good night's sleep.

The use of alcohol in sepsis is a much debated question. I do not use it if the patient can get a sufficient amount of nourishment without it. But if she is unable to eat well I do give it as a food, not as a stimulant. Give up its use as soon as possible for by its use more than one patient has been made a slave to it.

The question of nursing the baby will come up many times. In severe sepsis the milk usually disappears and the answer is self-evident. In long drawn-out cases of sepsis the baby should be taken off the breast, but if by clinical signs the patient at once begins to overcome the sepsis then the nursing should be continued.

Important as the medical treatment is, the nursing care in sepsis is more so and without careful nurses efficient work cannot be carried out.

That sepsis is the cause yearly of many deaths is a reproach to the medical profession. Until the standard of obstetric teaching is raised, until the laity at large become educated to the point that they will demand good obstetric care, then only will the death rate from puerperal sepsis be materially lowered. The midwives are bad offenders but their mortality and morbidity rates do not I believe approach the high morbidity rate of the poorly trained physician. The physician is licensed in all states, but the midwife in most states is simply tolerated. The physician goes ahead recklessly because he is licensed; the midwife has some fear of the law, and so her results usually are not so bad as those of the licensed physician who is poorly educated and trained, who has no fear of the law and is without conscience.

SECTION XVII.

PHLEBITIS.

Case 61. DOUBLE PHLEBITIS. This patient started in labor December 19th at ten P.M. It is her second labor, the first terminating in a normal delivery. She has always been a very strong and healthy woman. Pains did not become severe until six A.M. December 20th. At twenty minutes past six the membranes ruptured and she began to bear down at once in excellent second stage labor. At five minutes past seven the baby was born. There was no tear of the perineum. At quarter-past seven the placenta came away intact with all the membranes. There was no bleeding and she was in excellent condition. One vaginal examination was made in the middle of the first stage of labor under the usual aseptic precautions with sterile gloves.

The patient made an absolutely normal convalescence until the seventh day, when she complained of sharp pain in the lower abdomen and in the left groin. Absolutely no tenderness anywhere on palpation. Temperature normal. Pulse 78. An ice-bag ordered to the left lower abdomen.

December 28. Temperature to-night 100.2°, pulse 84. There is very slight tenderness in the left groin. Ice-bag continued and the patient told to keep very quiet in bed. Bowels are moved daily by enema.

December 30. Temperature this morning 99.5°, pulse 92. There is still very slight tenderness in the left groin but no swelling of the calf of the leg.

January 1. No tenderness in the groin yesterday. The ice-bag was omitted. This morning temperature normal, pulse 100. She complains to-day of pain in the calf of the left leg. Examination showed it to be slightly swollen and more tense than the right leg. It was found to be half an inch larger than the right. The leg was at once put up in a pillow splint. The patient was warned that she must be absolutely quiet and not attempt to move this leg.

January 2. The skin is shiny and there is edema present at the ankle. Landmarks of the knee joint are indistinct. Tenderness in the groin has entirely gone. Ice is kept constantly on the calf of the leg. Temperature to-night 100.8°. Pulse 104.

January 4. Pulse has dropped to 72 but the temperature remains slightly elevated from 99.6° to 100°. The skin over the calf is not as tense as last note and the tenderness is distinctly less.

January 6. Temperature last night 101.4°, pulse 108. She complained of slight shooting pains throughout the right leg. There is this morning very slight tenderness at the pelvic brim on the right. No tenderness in the groin or calf of the right leg. There is no tenderness or swelling in the left leg. Temperature this morning is normal but the pulse is 104. Ice-bag ordered to the right lower abdomen.

January 8. Tenderness to palpation along the course of the internal saphenous vein of the right leg is present. There is very slight swelling of the leg, slight tenderness in the right groin. The leg was encased in a pillow splint and the icebag put on the right groin. There is no tenderness of the left leg and the pillow splint is removed. Temperature to-night is 102.8° and pulse 108.

January 10. This morning she complained of much pain on the outer side of the right ankle. Pillow splint was taken down and examination shows over the external malleolus a red area the size of a silver dollar which is exquisitely tender to the touch. No fluctuation present. The ankle joint is not involved. Pillow splint was left open and the foot supported by another pillow so that there will be no toe drop. All pressure to be kept off the external malleolus. Because of the pain in the leg to-night she was given morphia gr. 1/8.

January 14. Redness and tenderness has entirely gone from over the external malleolus. Practically no swelling in the leg and very little tenderness. Patient has constantly been warned not to move her legs.

January 16. Temperature to-night is normal for the first time for three weeks. Pulse is slowly coming down to normal.

January 23. Sat up in bed with a bed rest to-day. No rise in temperature or pulse.

January 29. Sat up in a chair yesterday with her feet elevated. To-day she was allowed to sit up in a chair for two hours with her feet on the floor with no bad results.

January 31. She is now walking about the ward and has but very little swelling of the feet and none of the calves of the legs. The baby throughout the entire time has nursed and was satisfied and gained slowly but steadily.

Summary of Phlebitis.

Phlebitis in all cases is a form of sepsis. Infection is present and the physician must not try to hide behind any excuse. Be as careful as one can, and phlebitis will rarely follow. When all possible precautions against sepsis have been taken and a phlebitis follows, no blame can be placed upon the physician. If the physician is careless in his technique and infection follows, then he is to be blamed. If in his practice he obtains many cases of phlebitis it is proof that there are errors present in his technique of delivery.

Phlebitis usually appears about the tenth day but not uncommonly it is seen by the sixth or seventh day, rarely after two weeks. The first sign that appears is a slow rise in the pulse rate and then the temperature climbs by step-ladder rises. A high temperature does not always accompany a phlebitis. A high temperature and pulse rate is indicative of the severity of the condition.

Coincident with the rise in temperature or coming within a few hours of it, the patient complains of pain in the affected leg or on one or the other sides of the lower abdomen as did Case 61. Tenderness to palpation along the course of the affected vein follows closely upon the pain. If you palpate the leg do it very gently and only often enough to follow the progress of the complication. Edema of the leg is present and the slower the collateral circulation is established the greater is this edema.

The first point to be insisted upon in the treatment is absolute rest of the leg. The patient must under no circum-

stances move the leg. I believe in telling the patient in a few simple words what the condition is and warning her that rest is the essential point for her to keep in mind constantly. A pillow splint holds the leg well and is very comfortable. Care must be taken to avoid too much pressure on the leg. The importance of this is seen in the above case. If the patient complains of pain the leg must be carefully examined and it is not to be assumed that the pain is caused by the phlebitis alone. Sandbags beside the leg are satisfactory but they must be kept close to the leg constantly if they are to be of service. In all cases hold the foot up at right angles to the leg by placing a firm pillow at the plantar aspect of the foot. This prevents toe drop and the comfort given the patient is great.

An ice-bag to the point of greatest pain and tenderness gives the patient much relief but in a few patients the ice-bag is very annoying and then heat in the form of a flaxseed poultice is acceptable. If the pain is severe, codeine sulphate or morphia must be used, for if the patient is made comfortable then her ability to lie quietly in bed is much increased.

The patient's bowels should move once a day and she must be put on the bed pan by the nurse, for all voluntary motions of the legs on the patient's part are forbidden. Whether the patient is allowed to continue nursing depends entirely upon the severity of the phlebitis and upon her general condition. Each case must be settled upon its own merits.

The majority of physicians appreciate the danger when a phlebitis is present of embolism while the patient's pulse and temperature are elevated, they are apt to forget that the danger is present for some days after the pulse and temperature have become normal. After the mildest cases of phlebitis the patient should be kept in bed at least one full week after the pulse and temperature are normal. In severe cases two weeks should pass before the patient can be allowed out of bed. The patient must get up slowly and gradually, first a bed rest, then a chair with her feet elevated, then a few steps. One cannot be too slow in allowing patients in such cases to resume their daily routine. If the leg swells then it must be bandaged from the toes to the groin with Shaker

flannel cut on the bias. More expensive is the elastic bandage or a silk elastic stocking. If the latter is used, it must be carefully fitted. Whatever form of bandage is used it must be put on before the patient gets out of bed. If the leg is very stiff and walking is difficult after two months, massage of the leg may be begun, for by that time there is no danger that any manipulation will cause an embolus.

Rarely does the infection in a phlebitis, which is a periphlebitis as well, break down, and go on to abscess formation. Careful daily examination of the leg will show if this occurs. If abscess formation does occur the pus must be evacuated under a well-recognized surgical procedure.

Because a patient has once had a phlebitis is no proof that she will in another confinement develop a second phlebitis. Be honest with your patients, if a phlebitis develops it is not caused by their doing this or that or by their neglecting to do this or that thing. The complication is an infection; the physician is not necessarily to be blamed unless he is careless. No excuses for this trying complication are necessary and if any are given the physician generally realizes that his technique is at fault and is trying to cover up his carelessness.

SECTION XVIII.

PYELITIS IN PREGNANCY AND IN THE PUERPERIUM.

Case 62. PYELITIS IN PREGNANCY. Patient presents herself at the office November 8th, five months advanced in her second pregnancy. Her first baby was born eighteen months ago and was terminated by instruments after a forty-eight hour labor. She says she was badly torn but that the tear was repaired at once. She says she made a fair convalescence. She was at this time catheterized three times a day for several days. She says that now she has no pain on urinating, no increased frequency, more than what she would expect to have because of her pregnancy. She says that her urine has been examined twice recently by a general practitioner and that each time nothing has been found wrong with it but she brings a specimen with her which she says was passed one-half hour before she came to the office and that it has the same characteristics as the urine that had been previously examined. She wants to know if it really is right because it has such a bad odor. The odor was present when it was passed. Except for the fact that she is passing a bad smelling urine she thinks she is in very good condition. Bowels are moving without medicine. She is sleeping well and her appetite is excellent. Specimen that she left was normal in color, alkaline reaction, very cloudy, specific gravity 1.014. Albumin very slight trace, sugar absent. It does not filter clear. Microscopic examination of gravity sediment shows much pus, many leucocytes, singly and in clumps, many bladder cells, few large round cells, many smaller and less dense cells than the bladder cells, much vaginal epithelium. No casts seen.

Patient was immediately put on hexamethylenamine gr. v, every four hours in one-half a glass of water.

November 16. Patient reports to-day that she is passing three pints of urine, and that the odor is not quite as

bad as before. Specimen passed in the office was normal in color, acid, not as cloudy as the first, specific gravity 1.016, albumin slightest possible trace, sugar absent. Sediment shows pus present but not in such amounts as in the first specimen. Otherwise specimen is the same. Sediment was centrifugalized and a slide stained with methylene blue. Examination shows enormous quantities of a large thick bacillus, probably the colon bacillus.

November 22. Patient telephones this noon that she is having an attack of pain on the right side of the abdomen and also in the back. The pain runs down her right leg. She is seen at once, and the following history obtained. While walking about her home, she was seized with a sudden sharp pain on the right side of the abdomen low down. It is constant. Severe enough to make her go to bed. She has no increased frequency in passing her urine. She has not had any chill. She has had no nausea or vomiting. Bowels moved well this morning. Examination of the abdomen shows a pregnancy advanced about five months. Fetal motion is very marked. Uterus is soft, no contractions are seen or felt. Along the right border of the uterine tumor posteriorly she complains of tenderness on palpation. There is no spasm. The rest of the abdominal examination is negative. There is distinct tenderness and slight spasm in the right costo-vertebral angle on pressure. Motion in the right hip is normal and there is no tenderness anywhere in the right leg. Temperature is 100.6°. Pulse 100. Diagnosis: Pyelitis.

Treatment: She is told to stay in bed. To have a simple bland diet. To force the fluids and to put an ice-bag over the right kidney region. To take 20 drops of cascara at once and in the morning to take a suds enema. To measure and keep the twenty-four hour amount of urine. To continue the hexamethylenamine as before.

November 23. Patient slept well last night. Temperature is normal. Pulse is 80. Tenderness is distinctly less along the right side of the uterus and very much less over the kidney and there is no spasm. Twenty-four hour amount of urine is two quarts, pale, acid, specific gravity 1.006.

Urine is but slightly cloudy. Albumin slightest possible trace. Sediment same as last noted but much less in amount. Her baby is ill and she got up this afternoon. Apparently it did her no harm for the evening temperature was normal and the pulse was 80.

November 24. The patient now has no pain or tenderness anywhere and she is up and about the house. Urine has been acid for the past three days, the patient testing it daily by litmus paper. It was now changed to alkaline by the use of potassium citrate gr. XL every two hours. Bowels were kept open.

November 25. Specimen sent to the office, not of a twenty-four hour amount, is very cloudy, much sediment macroscopically. Microscopically same elements as before except that in this specimen there were many more bladder cells. Because of the amount of pus that is still present and because of the number of bladder cells in the urine I advised that the bladder be washed out.

November 26. Comes to the office. Bladder washed out with 4% boric acid solution and one ounce of 10% solution of protargol allowed to remain in the bladder. She has no pain now on the right side and apparently is very comfortable. Temperature is 98.6°, pulse 80.

November 29. Examination of the urine shows great improvement. But slightly cloudy. Slight amount of sediment. Specific gravity 1.010, alkaline. Twenty-four hour amount, two quarts. Albumin slightest possible trace. Pus cells show a few clumps, but the majority are single. A very few fine granular casts seen.

From now on for the next month the patient changed her urine over every third day from alkaline to acid, and vice versa by the use of potassium citrate and sodium benzoate with marked improvement. The bladder was washed out regularly three times a week as above noted for two weeks.

December 24. Urine filters absolutely clear. There is no bad odor present, acid, pale, 1.005, albumin and sugar absent. Microscopically, few leucocytes, singly and in clumps, no clumps of bladder cells. No blood and no casts. Stained specimen of the sediment shows very few bacteria.

The urine was examined from now on every ten days and there was a steady improvement. Once a week the reaction of the urine was changed from acid to alkaline and held alkaline for forty-eight hours and then again made acid.

February 12. Urine: specific gravity 1.010, color normal, acid, no albumin or sugar. Sediment very slight and settles rapidly, leaving the urine absolutely clear. Microscopic examination of the sediment: occasional bladder cell, few leucocytes. No clumps seen. Few large round cells. Stained specimen of the sediment shows bacteria in about the same manner as previously noted. The patient is in excellent condition and the pregnancy is progressing satisfactorily.

March 30. Slight uterine contractions with pain started up at half-past eight this morning. By five P.M. she was in active labor and about seven she was fully dilated and at ten minutes to eight she delivered herself. No fresh tear of the perineum. She made an absolutely good convalescence, except for very severe after-pains for which she had to have morphia. The first attempt at voiding her urine was unsuccessful. She was then given a high, large, hot enema and when she expelled this she voided her urine.

April 24. The urine was collected after the vulva was carefully washed off and urine passed into a clean dish and then put into a clean bottle. Urine normal in color, clear, acid, 1.012. On standing shows very slight sediment. No albumin, sugar not done. Sediment centrifugalized and it shows a rare blood corpuscle, very occasional leucocyte, rare dense, large round cell, probably bladder cell. Few calcium oxalate crystals.

June 13. Specimen passed into a sterile basin. Normal, clear, acid, 1.002. No albumin. Entire specimen centrifugalized and microscopic examination showed a few squamous epithelial cells. No casts, no blood, rare leucocyte. No bladder cells seen. The patient is in excellent condition, the baby is doing well on the breast. Pelvic examination is satisfactory and the patient is discharged well. She was told that she should not become pregnant again for at least two years and then not until her urine had been examined and pronounced normal.

Case 63. PYELITIS IN THE PUERPERIUM. November 2. Patient has had a normal pregnancy. At no time has the urine shown anything abnormal. Blood pressure has not been over 120 mm. at any time during the pregnancy. She started in labor on November 2nd. The membranes ruptured coincident with the first pain at 11 P.M. She immediately went into a private hospital. During the night she had pains every ten or fifteen minutes until eight o'clock on the morning of the third. Pains then began coming once in four minutes. There was no show. At nine o'clock she began having considerable amount of show. Vaginal examination at this time showed the head well in the pelvis; she was dilated about two-thirds and the anterior lip of the cervix was slightly edematous. Attempt was made to push back the anterior lip of the cervix but it was not successful. Fetal heart was 120 in the left lower quadrant. At half-past nine she was given gas-oxygen with marked relief. From nine to eleven there was no difference in the character of the pains. Shortly after eleven, on listening to the fetal heart it was found to have dropped to 90, and I determined then to deliver her. She was at once etherized. Vaginal examination showed she had made very little progress since the previous examination. She had a very tight perineum which tore on her right during the stretching. Forceps were rapidly applied to an O.L.A. position and the head brought in sight. Circulation was then seen to be present in the scalp and from then on a slow delivery followed. Baby cried as soon as it was delivered and was in good condition. Perineum showed an internal tear on her right running up on the right vaginal wall, which was repaired with four chromic catgut sutures bringing the perineum into excellent approximation. Very slight external tear repaired with two chromic catgut sutures. The baby weighed seven pounds.

November 3. Temperature 98.6° and pulse 90. In excellent condition. Uterus well contracted. Lochia normal. She complains of nothing except pain on the right side running from the right border of the ribs back towards the costovertebral angle. Palpation shows no tenderness and no spasm.

November 4. Temperature 99° and pulse 80. In excellent condition. No tenderness anywhere. She does not at the present time complain of pain on the right side. Temperature to-night 101°. Pulse 110. Physical examination shows absolutely nothing. No tenderness in the perineum or at the costo-vertebral angle. Breasts are becoming slightly full but do not account for the temperature.

November 5. Temperature this morning dropped to normal. Pulse 68. Complained this morning of slight burning on urinating.

November 6. Temperature this morning 99° and pulse 90. Careful physical examination showed nothing that I can find to account for the rise in pulse. Temperature to-night 101° and pulse 100. She again complained of burning on voiding and I asked the nurse to get a specimen uncontaminated with lochia as soon as she could.

November 8. Temperature this morning 99°, pulse 90. She has had no more burning on micturition. She has had absolutely no sign on physical examination and she feels perfectly well. Said last night she had slight headache. Otherwise nothing to note. Specimen obtained this morning, after the introitus was wiped off with sterile water and a sterile basin put at the introitus, was very cloudy and on standing in the urine glass a sediment of about one inch was deposited. Examination of this urine shows it to be pale, acid, specific gravity 1.012, slightest possible trace of albumin, no sugar. Sediment, quantities of pus, singly and in clumps; many large round cells and fewer smaller round cells; no vaginal epithelium present and no blood.

Diagnosis: Pyelitis.

The tenderness she had on the right side five days ago was in all probability due to this condition.

Treatment: She was put on forced fluids, absolutely simple diet and given 5 grains hexamethylenamine every four hours. Temperature to-night 100°. Pulse is 108, the highest it has been since delivery and a steady rise in the past four days.

November 10. Temperature yesterday not over 99.2°. Pulse under 100. To-day it has not been over 99° and the

pulse has been 92–96 all day. She is passing large quantities of water which is very pale and acid in reaction. Sediment shows fewer leucocytes than on the first examination.

November 12. Temperature this morning struck normal. Pulse 90. She is in excellent condition. She is passing large quantities of pale urine. Each specimen has been looked at macroscopically and is clearer but still cloudy.

November 14. Temperature to-night normal. Pulse has dropped to 72. Since last note there has been no change in the characteristics of the urine. I therefore put her on to potassium acetate 30 grains every two hours for three doses and asked to have the urine tested after four hours each time she voided. Hexamethylenamine stopped. Urine at the end of the third dose of potassium acetate was alkaline and it was then diminished to 15 grains every four hours with the order that the urine should be kept alkaline and if that dose did not keep it alkaline to increase the dose so that it would remain alkaline.

November 17. Temperature has been normal and the pulse below 90. Lochia has practically ceased and she is up on a bed rest. Has absolutely no tenderness over either kidney. No tenderness anywhere. Urine has cleared very much so that now it can be readily seen through. The sediment is the same though very much smaller amount of pus is present and very few clumps of pus seen.

November 21. Has been up and about the hospital for the past three days. In excellent condition. Urine is still alkaline. Is clear. Each specimen is looked at and none has been found to be cloudy. Urine passed this morning pale, alkaline, specific gravity 1.002, with no albumin. Sediment very slight and only an occasional leucocyte seen. Potassium acetate stopped to-day.

November 27. Went home five days ago. Has been running absolutely normal temperature and a pulse between 70 and 80. Urine remains perfectly clear. Single specimen examined to-day shows it to be acid in reaction, specific gravity 1.010. No albumin or sugar. Centrifugalized sediment shows very occasional leucocyte and a few round cells.

Summary of Pyelitis in Pregnancy and in the Puerperium.

Pyelitis in pregnancy and in the puerperium up to within the past few years has been regarded as an unusual complication. It is, however, not at all an uncommon occurrence. It is a very simple diagnosis to make provided the physician will take the trouble to make a careful complete physical examination.

Pyelitis is overlooked only when there is no blocking up of the ureter of the kidney effected. If drainage is good then no constitutional symptoms arise, but pus is found in the urine. The more complete the blocking of the ureter the more severe the constitutional symptoms. If the ureter is blocked pus is not necessarily found in the urine, but tenderness over the costo-vertebral angle of the side affected is always found. This tenderness, oftentimes with spasm, is so constant that it may almost be called pathognomonic of pyelitis.

In Case 62 the diagnosis might readily have been confused with acute appendicitis because here the pain was right sided as it most often is. Careful palpation, the finding of costo-vertebral tenderness and examination of the urine *microscopically* in all pregnant cases when there is acute abdominal pain will clear the diagnosis.

In Case 63 the cause of the temperature that the patient was running was not clear. Only once was there any tenderness over the kidney and then it was very slight. The difficulty of diagnosis here came in the fact that she had a perineal tear, and it was only by careful palpation of the perineum and watching the lochia, together with the microscopic examination of the urine, that the diagnosis was clear. If an uncontaminated specimen of urine cannot be obtained, a catheter specimen must be obtained in order to clear the diagnosis.

Change in micturition from normal, either of frequency or of pain, is most common, but absence of any change is not sufficient reason for not making a diagnosis of pyelitis.

The cause of most of the cases of pyelitis is the colon bacillus. How it gets into the kidney is a mooted question as is also the reason for the right kidney being affected more often than the left.

The treatment first to be begun is a bland diet, forced fluids and free catharsis, with the giving of a urinary antiseptic. If improvement does not follow, more active treatment must be instituted. Ureteral catheterization and lavage of the pelvis of the kidney has been recommended, but the further along the patient is in her pregnancy the more difficult this is to do. Vaccines have been used with success by some physicians but with the majority these two methods of treatment are not available. Alternating the reaction of the urine from acid to alkaline has clinically given me many excellent results. This is accomplished by first giving sodium benzoate gr. v every hour until the urine is markedly acid as shown by litmus paper. The reaction is then changed quickly to alkaline by potassium acetate or citrate in large doses, thirty or forty grains every two hours. Several writers have reported excellent results from the use of potassium acetate alone.

Only rarely will pregnancy have to be interfered with because of a pyelitis, but if it fails to yield to treatment and constitutional symptoms are present, then the uterus must be emptied. The prognosis for ultimate complete cure in pyelitis must always be guarded. A patient once infected, if she becomes pregnant again, very likely will have exacerbations during the pregnancy; how severe they will be is always doubtful. With careful supervision patients may go through a pregnancy with no upset but it cannot be guaranteed.

A patient who has once had a pyelitis should not go through another pregnancy until the urine by careful microscopical and bacteriological examination is shown to be normal. This must be insisted upon, but if the patient, after being warned not to, becomes pregnant again, the presence of a pyelitis is not sufficient cause for emptying the uterus.

Pyelitis in pregnancy may be a very serious complication and is one that always demands most careful oversight during the entire pregnancy. If after pregnancy the condition does not clear up, the question of the presence of a surgical kidney must be considered and, if present, ultimate cure will not follow until the kidney is drained by incision or removed.

SECTION XIX.

MASTITIS AND BREAST ABSCESS.

Case 64. ACUTE MASTITIS. This patient was delivered twenty-one days ago. In the afternoon of the twenty-first day of her convalescence she complained of a severe headache; otherwise she was feeling perfectly well. Temperature at 4 P.M. had been recorded as 99°, pulse 76. At eight o'clock in the evening she had a chill which lasted for twenty minutes. Temperature a half an hour after the chill was over, was 102° and the pulse 120. Except for a severe headache and some indefinite sensations of pain in the right breast there are no subjective symptoms. The baby has been nursing regularly and well from the breasts, and the nipples have not been tender.

I saw the patient at ten o'clock in the evening. She then was complaining of slight tenderness to pressure in her right breast. She had a severe throbbing headache. Temperature at this time was 103°, pulse 126. Complete physical examination was absolutely negative except for the tenderness throughout the entire right breast on palpation. There is no lump present. Breast is not full. There is no crack in the nipple.

Diagnosis: Acute mastitis.

Treatment: Baby to be taken off the breast. Ice-bag is to be put constantly to the breast. Breast to be supported by a light breast binder. The patient was given a teaspoonful of cascara to be followed in the morning by an enema.

Morning of the twenty-second day temperature 98.6°, pulse dropped to 85. Definite lump, the size of a hen's egg, felt in the lower outer quadrant of the right breast. Marked tenderness present. The rest of the breast is not full and is not tender. Over the lower portion of the breast where the ice has been there is a definite red area. The bowels moved twice this morning. Because of the severe headache which she has

had she was given an aspirin tablet gr. v repeated twice at two-hour intervals with marked relief. Baby is to nurse on the left breast until a home modification can be made up. Baby is not to be put back on the right breast to-day. Ice-bag is to be continued as before.

On the twenty-third day morning temperature normal, pulse 66. Breasts are not full. No pain. Right breast apparently accomodating itself to the fact that it is not being nursed as the milk is leaking away. Breast still shows a definite lump in the right lower quadrant but no tenderness. Baby to nurse on this breast at noon. Baby nursed well and seemed satisfied. Ice-bag is omitted.

Twenty-fourth day the baby is nursing regularly every two hours from the breasts. From the right breast the baby is not satisfied and the breast does not fill up between nursings. Baby nursed the right breast for ten minutes and then was given a supplemental feeding of half an ounce of the modified milk.

On the twenty-fifth day more milk came into the right breast. Baby obtained two ounces. There is no tenderness and now no lump in the breast. Patient is up and about the house and seemingly perfectly well.

Case 65. BREAST ABSCESS. INCISION UNDER ETHER. Patient was seen for the first time August 21st. She had a normal delivery July 4th, and made an excellent convalescence. She nursed her baby and was discharged from the hospital July 17th well. At no time while she was at the hospital did she have any difficulty with the breasts. She has nursed her baby regularly and the baby has done well. She had no pain in the breasts until ten days ago when her right breast began to feel "sore" to the touch. She says there was no crack in the nipple. She was advised by friends to rub the breast and for the last four days she has rubbed it morning and night with warm lard. Condition has become steadily worse and she now comes to the hospital for advice. She says the baby refuses the right breast and that it has not been nursed for forty-eight hours.

Examination shows the right breast to be nearly twice as large as the left. In the inner upper quadrant there is a red area the size of a silver dollar. The breast is tender to palpation and over this red area the skin pits on pressure. Distinct fluctuation is present. Temperature 100°. Pulse 98.

Diagnosis: Breast abscess.

Treatment: Immediate incision advised.

She was not prepared to stay in the hospital to-day but promised to return to have the abscess opened the next morning.

August 22. Her temperature this morning was 102.5°, and her pulse 120. She was given ether. Breast scrubbed up with soap and water and preparation finished with alcohol 70%. A three-inch radiating incision was made in the middle of the mass and much green pus evacuated. Smaller cavities broken up with the finger so that there was only one large cavity present. The cavity was wiped out with dry gauze and packed wide open with a sterile dry gauze dressing. A dry dressing applied and a supporting binder was put on.

August 23. Temperature this morning was 99.4°; pulse 94. She has no pain in the breast and palpation over the breast does not cause her pain. Night temperature 102°; pulse 105. Bowels moved this morning.

August 24. Temperature 98.6°; pulse 82. Night temperature 99°; pulse 88. From then on she ran absolutely no temperature and her pulse steadily dropped. The baby is nursing on the left breast alternating with bottle feeding.

August 28. To-day is the sixth day since the abscess was opened. The dressing had stained through and the odor to the discharge became marked. The dressing was then taken off. Gauze packing removed without any pain and the cavity presented an absolutely clean granulating area. No necrotic tissue present. Cavity again packed with dry gauze but much less in amount used.

The patient has been up and about the ward for the last three days. No tenderness in the breast, and practically no induration.

August 29. The dressing was done to-day. Cavity clean. No odor to the dressing. Cavity distinctly smaller. She was discharged to the out-patient department where the abscess cavity was to be dressed daily.

September 26. She has reported as requested at first daily, then as the wound healed every third or fourth day. The cavity gradually closed until to-day the wound is practically healed.

October 10. She reports at the clinic to-day and says the wound has been healed solidly the last ten days. No dressing over the breast. No milk in the breast. Baby is nursing the other breast and every other feeding has the bottle.

April 15. She reports to-day, six months after the last visit. Milk in the past few days has returned in the right breast and she was advised to resume nursing from it. The scar is solid and no induration about it.

Case 66. ACUTE MASTITIS. LACTATION STOPPED. June 6. Patient is twenty-eight days delivered and has been up and about her home for the past week. Has been nursing her baby and the baby has been doing well. There has been no tenderness in the breasts. On the third and fourth days the right nipple was slightly tender but with applications of compound tincture of benzoin after each nursing healed quickly and soon became normal. On the morning of the 28th day patient had a chill and complained of severe pain and tenderness in the right breast. Temperature when the nurse telephoned was 99° and pulse 100. I saw her within two hours and she then had a temperature of 103.4°, pulse 120. She complained of a very severe headache and was aching all over. Face is flushed. Physical examination of the abdomen negative. Heart and lungs negative. Left breast is normal. Examination of the right breast shows no redness. On palpation no lump made out but exquisite tenderness is present throughout the entire breast. Baby is taken at once off this breast and ice-bag was ordered to be put constantly on the breast. Baby is to continue nursing from the left breast. The bowels were opened with licorice powder.

June 7. Temperature 101.4°, pulse 96, at nine this morning. Breast is full. Not as tender as yesterday. A definite lump, size of a pigeon's egg, is present in the right outer quadrant of the right breast. With a sterile English breast pump I drew off two bulbfulls of milk, which gave her distinct relief. There is a slight suggestion of edema over the mass but nothing absolutely diagnostic. Her bowels have moved three times since the last visit. Ice has been kept on the breast continuously. Temperature at 12 noon 102.4°, pulse 96. Temperature at four this afternoon 100.4°, pulse 90.

June 8. Telephone message from the nurse this morning saying the temperature is 98.6°, pulse 72. The patient is feeling very much better. No headache. Breast very much less tender. Right breast is very full and tense and I ordered that two bulbfulls of milk be pumped out with a sterile breast pump. Ice was ordered to be continued to the breast.

June 9. Morning temperature 97.6°, pulse 70. 12 o'clock temperature 99.4°, pulse 80. Breast slightly red, due probably

to the ice. Entire breast is tender, but most of the tenderness is in the mid-axillary line where the ice-bag has gone over the breast tissue onto the skin.

June 10. Telephone from the nurse. Temperature 99.4°, pulse 80. Patient feeling very comfortable though the breast was very full and hard. I saw the patient at five P.M. Temperature at four 99°, pulse 72. There was no edema present. Breast is tense but no definite lump can be made out, because of the fullness. With the aid of the breast pump obtained four bulbfulls of milk with marked relief. Highest the temperature has been at any time during the last two days was 99.4°, and the pulse has not been over 80. On the whole there is a steady tendency downward of the pulse. I decided to take off the ice and two hours later to put the baby to the breast.

June 11. Baby nursed well last night and this morning from the breast. Temperature 97.6°, pulse 70. Patient is up and about her home.

June 17. Left nipple became tender and she again complained of much pain in the right breast. Nothing definite to be felt on examination. Her husband was very much against her continuing nursing. She was in poor physical condition and she herself was also very much averse to nursing. Because of the fact that she had several flareups with her first nursing and had had this severe one and another threatened one now, I agreed to stop nursing. Baby immediately put on modified milk from certified dairy. Ice was now put on both breasts. Breast binder was put on for support only. To-night she was given codeia gr. 1/2 because of pain.

June 18. Breasts have filled up but very little. There is no tenderness present but there are lumps in both breasts.

June 19. Temperature normal. Pulse 72. Breasts are filling up but little. Lumps present are not tender. Ice has been taken off the breast but the breast binder is kept on for support.

June 21. Breasts are now growing smaller. Very little milk in them. They are soft. Lumps are not tender. Milk is drying up satisfactorily.

June 25. Temperature is normal. Breasts are soft and flabby. There are no lumps present and but a few drops of milk can be expressed from either nipple.

Case 67. MASTITIS. BREAST ABSCESS. BIER SUCTION BELLS. June 21. Patient presents herself at the office giving the following history: — Four months ago she had her fourth confinement. Her convalescence was normal. Three weeks ago the right nipple became very tender and she noticed a crack in it and at two different times saw blood coming from this crack. She did not do anything for this condition and continued to nurse from this breast. The next day the whole breast became tender with shooting pains in it. That evening she says she had a chill. Seventeen days ago she saw a physician because the breast pained her more and more and because the baby would not nurse from it. This physician told her that she had an abscess in the breast and advised her to let him lance it. She says he "froze" the breast and then lanced it, but no "matter" came out. Since the breast was opened she has not attempted to nurse from it but has used the breast pump to milk out the breast two, three or four times a day depending upon how full the breast was. The breast pump she says was not boiled. The milk she obtained she gave to the baby for the first day, but as he vomited it once and finally refused to take it she gave up trying to give it to him. For the past ten days she says there has been a lump in the lower and outer part of the breast. Her physician told her that this was due to the backing up of the milk and told her to rub it with hot camphorated oil three times a day. This she says she has done up to yesterday when the tenderness was so great that she stopped. She also says that there is much throbbing in the breast.

Examination shows the breasts to be large and pendulous. The left is normal. In the upper outer quadrant of the right breast is a radiating incision partially healed, three-quarters of an inch long, part of which is in the areola. From this incision can be pressed out a few drops of pus. There is a slight amount of induration present about this incision. In the outer lower quadrant is a mass the size of a child's fist. The skin over this mass is reddened and marked edema is present. Definite fluctuation is found. Tenderness over this mass is great. Temperature is 100.6°, pulse 110.

The diagnosis of another abscess is evident and the pus

must be evacuated. **Treatment.** In the region of the mass the breast was cleaned up with 70% alcohol and with ethyl chloride local anesthesia, a stab incision was made directly into the middle of this mass and about half an ounce of thick greenish pus was let out.

An eight-inch Bier bell was put on this breast and suction was carried on for five-minute periods, with three-minute intervals four times and much bloody pus from the stab incision and some milk from the nipple was withdrawn. Only a few drops of pus came from the first incision. The suction caused no pain. A sterile dressing was placed over the incisions and a supporting binder held the breast well up on the chest with great relief.

June 22. Reports at the office. Slept well last night. No pain in the breast and no throbbing. Temperature 98° and pulse 80. Dressing taken off and very little discharge present on the dressing. Redness is distinctly less. No tenderness present. The mass is about the same size as yesterday. The Bier bell was put on for five periods of four minutes each with two-minute intervals. About three ounces of milk were withdrawn from the nipple as a result of the suction, but no pus came from the incision.

June 23. Breast is causing her absolutely no discomfort. Is discharging very little. Temperature 98.6°, pulse 88. There is no redness present. No tenderness except on very deep pressure. Mass in the breast is distinctly smaller than two days ago. Bier bell put on for four periods of five minutes each with three-minute intervals. No pus but a small amount of straw colored serum obtained and about one ounce of milk from the nipple.

June 24. Temperature 98.2°, pulse 82. There is no discharge on the dressing. There is no redness and no edema. No tenderness present. Induration is much less marked than yesterday. Bell put on for four-minute periods five times with two-minute intervals. Only a small amount of yellow serum from the stab incision obtained. Examination of the milk under the microscope shows many leucocytes to be present.

June 26. Temperature 98.6°, pulse 80. Few drops of discharge on the gauze dressing. The mass is growing smaller

and there is apparently much less milk in the breast, as suction drew off but about one-half ounce. Bier bell put on four periods of five minutes each with two-minute intervals.

June 28. Temperature normal, pulse 76. No discharge on the dressing. Induration is growing steadily less. Bell put on three periods of five minutes each with two-minute intervals. Only a few drops of serum came from the incision.

June 30. There has been a steady improvement. Temperature normal. Pulse 76. No pain in the breast and no discharge. Practically no induration present about the incision. Examination of the milk under the microscope shows no leucocytes. Patient advised to put the baby to the breast twice to-day and before she reports at the office in two days to put the baby regularly back onto the breast. Bier bell put on to-day for three periods of five minutes each with two-minute intervals.

July 2. Patient reports over the telephone that the incisions are healed, that there is no tenderness in the breast and that she can feel no lump. Baby is nursing regularly from it and apparently is satisfied.

Summary of Mastitis and Breast Abscess.

Reference to the histories of these four cases and of others in the text make it very evident that a mastitis may appear at any time while a woman is nursing. This is true, and this possibility of a patient having an acute flareup while she is nursing must always be kept in mind. With tender, cracked nipples the danger of infection is always greater, but it is not unusual for a mastitis to appear where there is no demonstrable crack or when there has been no tenderness on nursing.

The typical onset of an acute mastitis is seen in Case 64. A sudden chill, a severe headache, a rise in temperature and pulse far out of proportion to what one finds on physical examination is the usual story. In the first few hours the breast usually is tender, how tender it is depends upon the nervous makeup of the patient. In some cases patients will scarcely allow one to palpate it at all; in others the tenderness is only appreciated on deep palpation. Usually in the first

few hours no mass is felt, but within twelve a definite lump is palpable, of varying size depending upon the severity of the infection and the speed with which treatment has been begun. The diagnosis of acute mastitis made, the treatment as above described should be begun at once. The patient should go to bed. The baby must be taken off the breast. An ice-bag is placed at once on the breast where the point of tenderness is greatest. If the entire breast is tender and no one point more tender than another, then one ice-bag will not thoroughly chill the breast tissue and a second must be added. With a high temperature, an average sized ice-bag stays cold about one hour. If one uses the largest sized bags, the weight of the ice may cause the patient much discomfort. Many times one can arrange two small bags to better advantage than one large one. Fill the bag not more than three-quarters full, screw on the cap lightly and then squeeze out the air within the bag. This adds much to the comfort of the patient because the bag stays on the breast more closely than when it is balooned up with air. The ice-bag is kept in place by a light supporting binder. Care must be taken to have the ice-bag on the breast tissue and not on the ribs. More than once have I heard patients complain for days after the ice-bag was removed of the pain it caused because of carelessness in placing the bag by the nurse or attendant. Occasionally the ice freezes the skin and blebs may appear. In cases where the skin is very delicate and very tender a layer or two of gauze must be placed over the skin to prevent freezing. For the headache and general malaise which is so often an accompaniment of this condition, aspirin gr. v every two hours for three doses or a so-called migraine tablet will help. The bowels should be opened but not purged. I never use magnesium sulphate in an acute mastitis, — it purges the patient too much and without a doubt upsets the stability of the milk. Cascara or licorice powder followed by an enema in the morning is sufficient.

The prognosis in these cases, properly treated, is excellent. Usually within forty-eight hours, occasionally seventy-two, the temperature drops to normal. To be certain that all danger is over the pulse must also drop. Again and again have

I seen the temperature drop from 102° to 99°, occasionally to flat normal, but the pulse has only come down to between 90 and 100 when the patient's normal rate is about 70. In such cases watch carefully for further developments for if the pulse stays up it is the strongest evidence one can have that infection is still present.

As the breast is not nursed it shortly becomes full and uncomfortable. The more closely you approach absolute rest for the breast, the better it is. Not infrequently, as in Case 64, the breast begins to leak out milk and the acute distention is thus overcome. If it does not begin to leak and the discomfort is great, then pump out a bulbfull, possibly two, of milk, with an English breast pump. Carefully used, the breast pump is of the greatest help; carelessly used, as in Case 67, a source of much harm. The breast pump must be boiled each time before it is used. It is then cooled and put on over the nipple at right angles to the nipple and the breast tissue. Care must be taken not to have the edge of the flange press too strongly on one part of the breast tissue so that it stops the flow of milk from the ducts beneath this point of pressure. Allow the rubber bulb which was squeezed down before the pump was put on to pull out gradually. Do not work this rubber bulb in and out. It is surprising to see the relief that the removal of even one bulbful of milk gives the patient.

In cases where the pulse and temperature fall to normal within twenty-four hours of the onset, the baby usually may be put back on the breast at the end of the second twenty-four hours provided of course the temperature and pulse stay down in the interim.

All patients having a breast upset should at once be put on a four-hourly chart.

Usually the tenderness disappears gradually as the temperature comes down; the mass, however, is much slower to go. In Case 64, the lump did not entirely disappear for nearly four days. Where there is no tenderness and the mass still persists, gentle massage towards the nipple while the baby is nursing will many times hasten its disappearance.

In Case 66 I felt that I put the baby back on the breast too soon but one never can definitely say whether it was that or

that the patient had another flareup six days after the baby was nursing. If a breast clears up it clears up absolutely; there should be no doubt in your mind at all. If there is doubt, the chances are that this acute mastitis has gone or is going on to abscess formation. If there is doubt boil a hypodermic needle and plunge the needle, after the skin has been sterilized into the midst of the mass. The needle used in such a case must be of larger calibre than the usual hypodermic needle for with a small needle it is difficult to suck up pus into the barrel. If the mass persists, with even only a slight rise in temperature and the pulse also remains up, there probably is pus present. Edema of the skin over the mass has always been, in my experience, absolute proof that pus is beneath. Edema is not always present where pus is, but when edema is present, pus also is.

If pus is present it must be evacuated at once; there *must* be no delay. Never watch a breast twenty-four hours or forty-eight hours when you have made a diagnosis of breast abscess hoping that it will disappear spontaneously. It will not and your delay simply allows more destruction of tissue to take place. Cases 65 and 67 show the three methods of treating breast abscesses. The first is the open surgical, the second is the so-called medical incision, the third is Bier's hyperemic method. If one does not mean to use Bier bells, the small medical or stab incision should never be used. Case 67 shows the bad results which may come from this method,—I should say the usual result which follows its use. Its use is only mentioned to be condemned. The neglected breast abscesses which are so frequent in out-patient clinics come from this method oftener than from any other.

Bier's method of treatment by increased hyperemia is excellent. The objection to it is the cost of the apparatus for the few cases that one private physician sees. This, therefore, leaves but the open surgical method for the great majority of cases.

Every patient having a breast abscess should be etherized, to have the abscess opened. Satisfactory results are not obtained if this is not done. The breast is first washed up with soap and water and then carefully wiped off with 70%

alcohol. A radiating incision is made in the midst of the mass. Do not incise the areola for the pigment of the areola follows out the incision when healed. But if the abscess cannot be properly drained without cutting into the areola do not hesitate to do so. The object of a radiating incision is so that as few milk ducts as possible may be damaged. The length of the incision depends entirely upon the size of the mass, — the cavity must be laid wide open so that perfect drainage will occur. The pus is evacuated and the cavity is wiped out with dry sterile gauze. The many little pockets of pus which are always present are broken up with the finger. Do not put hydrogen peroxide into the cavity. Much more harm is done by further spreading the infection than any possible good which may come from its use. If you wish, wipe out the cavity with gauze soaked in alcohol 70% but even this is not necessary. Pack the cavity firmly and evenly with dry sterile gauze. There is no better stimulant for such a cavity. A dry sterile dressing is then put in place over the incision and the breast is supported by a firm but not tight bandage. A glance at the history of Case 65 shows what commonly happens in an abscess treated in this way. The marked drop both in pulse and temperature always comes if the abscess is opened widely enough. The marked rise the evening of the day this abscess was opened is unusual. A rise often occurs but not so marked as this patient showed. The drop in the pulse rate is most characteristic and if healing goes on well there is no further rise, but if there is any backing up or extension of the abscess the pulse at once rises, usually before the temperature.

The dressing is not disturbed for from four to six days. The outside dressing is changed as often as is necessary to absorb the discharges. In this case I left the first dressing untouched longer than usual because of the marked scepticism of two graduate students. The gauze, after this length of time, is removed without the slightest pain and in all cases the cavity is found filled with clean red granulation tissue in marked contrast to the dirty necrotic tissue seen when the cavity was opened. If the gauze is removed on the second or third day sufficient time has not been given for the granula-

tions to grow, and the removal of the gauze at this time is always painful as are the packings for the next few days. A daily dressing is done after the first packing is removed. At the second dressing much less gauze is packed into the cavity. Experience will tell one how much to put in. The entire cavity must have firm pressure on it with the gauze. In one's own practice one should never have neglected abscesses so long that more than one incision becomes necessary. But should one meet an abscess so large that one incision will not drain it properly do not hesitate to make a second. The lower incision should be so placed that the best drainage possible will occur. Do not use rubber tubes for draining these abscesses. They are in no way as efficient as gauze. They become quickly blocked and where they touch the cavity and at the edges of the incisions, the granulations become sluggish and dirty.

The induration about the cavity gradually disappears and the cavity rapidly decreases in size but the final healing is many times very slow. Occasionally healing is delayed by the constant discharge of small amounts of milk. This condition is called a milk sinus. It is annoying, for it prolongs the healing. It is best treated by being left alone or at most a small pad is put over the sinus and moderate pressure applied. The sinus may last for weeks before it finally ceases to discharge, but one can tell the patient with assurance that it will close. There is no reason why nursing on the sound breast should not be continued.

Treatment of breast abscesses by Bier's suction method has not gained favor in this country. The only objection to it is, as already mentioned, the cost of the apparatus. For a full consideration of this method the reader is referred to an article in the Boston Medical and Surgical Journal, Vol. 160, No. 19, pp. 601–608.

In this method if there is pus present it must be evacuated. Do not think that the increased hyperemia will absorb the pus. In marked distinction to the open surgical method the incision here is simply a stab incision made under local anesthesia.

The advantage of this method is that the functioning of

the breast is usually continued. This is well shown by Case 67. Here there was an interval of nearly a month before the baby again nursed, but all this time milk remained in the breast. The baby was not allowed to nurse until the pus cells disappeared from the milk as shown by microscopic examination. This return to nursing after the open surgical method also occurs, but not so frequently as with the Bier method.

Breast abscesses will occur with the most careful physicians and nurses, but the more care that is given the breasts, the quicker ice is applied to the breast when a mastitis occurs, the less frequently will an abscess appear. It is unfair to put the blame of an abscess on a nurse provided she has notified you the moment the first pain and tenderness in the breast appeared. The responsibility after this is yours and for the good or bad result you alone are held responsible. Unceasing vigil during the nursing period alone will stop the appearance of abscesses. Patients must be warned to report at once any pain or tenderness that they may have in the breast during the nursing period. Make them realize that you want and will accept the responsibility of their condition only with the understanding that you are to be told of the first indication of trouble.

The method used to dry up the nursing breasts is seen by reference to Cases 66, 71, 75. It is essentially to leave them alone. As the breasts become distended and uncomfortable an icebag is put on each breast. The comfort that this gives the patient is great. A binder is applied for support only, not for pressure. If the pain is severe and the patient is unable to sleep codeia may be given; morphia practically never is needed. The bowels are kept open but not purged and the patient takes what fluids she wants. In nearly ten years work I have never in private practice ordered magnesium sulphate, put on a tight, so-called Murphy binder, or limited the fluids ingested when the breasts were being dried up. Leave the breasts alone is all that is necessary. If the breasts are not nursed they at once appreciate this and stop secreting. For twenty-four, occasionally forty-eight hours, the breasts are uncomfortable, sometimes even very tender. The patient's

comfort is much increased if a bulbfull or two of milk is pumped out from each breast by the breast pump. The objection to this is that it stimulates the breast and prolongs the process of drying them up. But if haste is not essential the comfort of the patient is much increased.

SECTION XX.

HEART DISEASE IN PREGNANCY.

Case 68. PREGNANCY WITH MITRAL REGURGITATION. NORMAL DELIVERY. November 26. The patient is seen for the first time to-day. She is referred by her family physician for decision as to whether she should be allowed to go through her present pregnancy, which is some six weeks advanced, or have an abortion done at once because of the marked mitral regurgitation which she has. He says she has never had any broken compensation. The patient is thirty-eight years old. She has had four pregnancies. All normal deliveries. On the second and fourth she had severe post-partum hemorrhages. In the latter part of the fourth pregnancy, two years ago, she developed, she says, "kidney trouble and some heart trouble." Her last menstruation occurred on October 8th. It lasted nine days, which was longer than the usual length of her periods. Her September period was normal in every respect. On November 8th she had a very slight flow for a few hours, which necessitated her wearing a napkin for one day. She says that since her first baby was born she has worn a pessary for a retroversion and that she felt sure she would not become pregnant as she never had before while the pessary was in place. As an excellent physician, one in whom I had every confidence, had examined her within a week and told her he could not make a diagnosis of pregnancy, but that the uterus was in good position by the pessary, I did not examine her at this time. Her pulse when I first saw her was 100, regular and of full volume. Blood pressure 120 mm. of Hg. Last June she was examined by an internist and she still considers herself under his care. I told her that I would not consider an abortion until this physician examined her heart again. If he said that she should have an abortion done I would do it, but only after a consultation with him. If she is pregnant, and she

thinks she is, she will be due for delivery the week of July 11–18th.

She went at once to see her medical adviser. He said, after a complete physical examination, without any hesitancy, that she need not have an abortion done, that with careful management she could go through her pregnancy probably without too great a risk; that when he saw her last June she showed a small amount of albumin and a few casts in her urine but that he did not think an abortion indicated especially as she is so situated that every safeguard can be thrown about her. Both she and her husband accepted gladly this advice as neither had any desire to have an abortion performed. She is to send in a specimen of her urine from the twenty-four hour amount each month up to the sixth month, than every two weeks and the last month of her pregnancy once a week. Her heart at the present time, the consultant said, was well compensated and needed no stimulation. He has asked her to let him examine her heart once a month during the first months of pregnancy. She is to rest with her clothes off for at least an hour after lunch each day. Is to avoid going up and downstairs. She is to walk only on level stretches and slowly. The slightest untoward symptom she is to report, if she cannot reach him, to me.

December 4. She telephones that a varicose vein which she has had for years in her right leg is giving pain. Examination at her home shows no tenderness except on deep pressure over the saphenous opening of the right leg. The vein is prominent in the upper third. There is no induration present and no edema of the leg. Temperature is 98.6°, pulse 72. The leg was bandaged from the toes to the groin with a three-inch flannel bandage cut on the bias. For twenty-four hours, she was told to stay upstairs but was allowed to go about this floor. Her heart was listened to at this time and a loud systolic murmur found at the apex, transmitted to the axilla. The pulmonic second is sharp, and much louder that the aortic second. No enlargement is made by out percussion. Blood pressure is 124.

December 7. The patient telephones this morning that

her maid is unable to put on the flannel bandage satisfactorily and she asks if something cannot be done. She was at once measured for an elastic stocking to run from the ankle as far up in the groin as is possible.

February 21. The pessary to-day found held tightly in the vagina. The anterior arm impinges on the urethra. The uterus is out of the pelvis and so much enlarged that there is no possibility of its becoming incarcerated. The pessary was therefore removed.

March 11. The elastic stocking gave her complete relief from all pain. There is no swelling or tenderness in either leg. Examination of the heart shows no change from the first examination. There are no râles in the lungs. No edema of the legs. Blood pressure is 130. A month ago she gave up drinking the one cup of coffee she had in the morning as she thought it caused a dull ache over the heart. Since she stopped it the ache has disappeared. Her urine has been normal at each examination.

May 3. She reports to-day at the office. She is feeling well except for an occasional sensation of fullness and distress about the heart. Her bowels are moving freely. Her urine she said the first of the month was a little over four pints. It was suggested by her medical adviser that if she kept the urine in the vicinity of three pints it would make her more comfortable. Blood pressure is 130. Heart sounds the same as previously noted. No râles in the lungs. No edema of the feet.

May 11. Urine analysis: 24-hour amount 1625 c.c. Normal color. Reaction acid. Specific gravity 1.011. Albumin by heat, absent; by nitric acid, absent. Sugar, no reduction by Fehling's solution. Microscopic examination:— No casts, pus or blood seen. Large amount of squamous epithelium.

July 6. She has reported as requested and all examinations have been satisfactory. I saw her to-day at her home. Her pulse was found to be 124 to the minute. Heart examined. Apex one to two centimeters outside the mamillary line. Not heaving or diffuse. Systolic murmur as before. Pulmonic second accentuated. All beats transmitted to

the radial arteries. No râles in the chest. No edema of the extremities.

The reason for this rapid pulse rate I could not determine. Her nurse is with her and she is told to take her pulse every four hours to determine whether it stays at this rapid rate. Palpation of the abdomen: — Large baby, lying in a left position. Head is engaging at the brim and by the fourth manœuvre is found to be well flexed. Biparietal diameter is not through the brim. Fetal heart is 120 in the left lower quadrant. The placental bruit is very loud also on the left.

To-day she was put on a three-quarter grain pill of imported digitalis leaves morning and night for two days, then ordered to omit it for two days and then to repeat until labor comes on.

July 7. The nurse telephones this morning that shortly after my visit the patient's pulse dropped to 90 and at no time since has it been over that.

July 12. Urine analysis: — Twenty-four hour amount three pints. Color normal; acid in reaction; specific gravity 1.010, albumin by heat a very slight trace, by nitric acid slightest possible trace. No reduction by Fehling's solution. Sediment slight. Microscopic analysis: — Few hyaline and fine granular casts seen. No blood. Few leucocytes. Few large and small round cells. Much vaginal epithelium.

July 16. Telephone from the nurse at 9:15 P.M. says that in the last half hour the patient has had three very hard contractions and that she thought she was starting up in labor. I saw her at ten. She was having no pains and as she had no more in an hour she retired. At 2 A.M. July 17th her husband called me and said she had just had one hard pain and that the "waters had come." She at once started in labor. Fetal heart was regular at 120 and as the head was firmly engaged I did not then examine her. Her pulse was 90 and regular. She was at once shaved and given an enema. Her labor was very desultory, pains coming irregularly at from ten to forty-minute intervals lasting from twenty seconds to a minute and a half. At five, examination showed the os uteri two-thirds dilated, cervix thin. Head can be pushed up out of the brim. Liquor is coming away clear. Fetal

heart was found to be 160 but regular and while listening to the heart the baby was seen to kick vigorously for nearly a minute. Fetal heart was now watched very carefully and the rate steadily dropped until at the end of half an hour it was 120, regular and loud. It stayed at this rate for the next hour. When I found this increase in the heart beat and the vigorous kicking, I had my instruments sterilized at once in order to be ready for any emergency. At eight the pains were coming every twenty minutes distinctly harder and lasted regularly one minute. Palpation now showed the head to be well in the pelvis. Uterus relaxing well between pains and not tender. Fetal heart 120; maternal pulse 92. At twelve the pains began coming every three minutes and changed to typical second-stage pains. She was at once put into the left lateral position. Everything was ready for delivery. Because of the history of two previous severe post-partum hemorrhages and because of the cardiac condition I had sent for an assistant to watch her heart and to hold carefully and intelligently the uterus immediately after the labor. At twelve-fifteen the perineum showed the first bulging and with each pain she made marked progress. She was given obstetrical ether and as the head came over the perineum she was for the moment unconscious. The baby was born at twelve-thirty. It cried at once and was in excellent condition. My assistant held the uterus down well and there was but slight amount of bleeding. Patient's pulse did not go over 100. As soon as the cord stopped pulsating it was tied and cut. The uterus was now reported as contracting poorly and there was more than normal amount of bleeding. Her pulse was 110. She was turned on her back so that the uterus could be held to better advantage. At twelve-fifty the placenta came away spontaneously, — intact with all the membranes. She was at once given aseptic ergot intramuscularly. The perineum showed no fresh tear. She was cleaned up, a sterile pad put in place, and put back in bed. The uterus contracted only fairly well. Its relaxed periods were longer than one liked. Her pulse, however, had dropped to 90. Coincident with each contraction she flowed freely. The uterus had

been held constantly. I now took the uterus. It was large, but no clot or blood could be expressed. It continued to relax and she was given a second dose of ergot, and ice was put to the fundus. With the ice and gentle manipulation, together with firm pressure on the fundus when a contraction came, the uterus steadily acted better. I held the uterus for an hour after the placenta was delivered and at no time allowed it to fill up with blood. There continued to be more than the normal amount of flow, but her pulse chart showed a steady though slow drop. At the end of an hour the uterus was not held, but I went back to it every five minutes. It continued to act better and half an hour later it was left alone fifteen minutes at a time and it did not fill up. At four her pulse was 72 and she was flowing only a normal amount. She had taken two cups of chicken broth and was in excellent condition. The binder was then put on. The baby weighed 9 pounds and 2 ounces.

9 P.M. Visit. The nurse had just expelled a large clot from the uterus. Patient's pulse 90. She has not voided, and a secondary tumor mass is found to the left of the uterus. She has already begun to be distended. I ordered at once that she be given a high hot enema in order to induce her to void her urine. If not successful I was to be notified. Castor oil, one ounce, to be given about four A.M.

July 18. Temperature normal, pulse 76. Voided last night with the help of the enema and passed much gas. This morning had a good result from the castor oil and now there is no distension present. Uterus is tender, lochia is normal in amount and character. Colostrum is present in the breasts and baby is to be put to the breasts every four hours.

August 2. Has made a perfect convalescence. Baby is nursing and is gaining. Patient began her leg exercises on the fourteenth day, and now is doing them morning and night for five minutes. Her heart has acted perfectly well the entire time.

August 6. Vaginal examination to-day shows the previous perineal tears; slight bilateral tear of the cervix. Uterus in third-degree retroversion. Not tender and by *bi-*

manual manipulations readily replaced. The pessary which she had previously worn was inserted and it held the uterus up in excellent position. Three days after she got up the pessary was taken out and the vagina inspected; no erosion seen and it was replaced. The patient is in excellent condition and is now referred back to her family physician.

Case 69. MITRAL REGURGITATION COMPLICATING PREGNANCY. EARLY RUPTURE OF THE MEMBRANES. VOORHEES BAG. FORCEPS DELIVERY. July 25. Patient is referred to me by her physician for care during her pregnancy. She gives the following history: — Until she was eighteen she was always perfectly well in every respect. She then had an attack of rheumatic fever and was in bed six weeks. Since then she has always had to be careful because she was told that one valve in her heart leaked. She easily gets out of breath on going upstairs or walking up hills, but she can walk slowly long distances without any shortness of breath. She has never had to go to bed because of her heart. Her feet never swell. Her last menstruation was on February 8th and her confinement will be due from the 15th–18th of November. This is her first pregnancy. Examination of her heart showed it to be enlarged to the left one finger's breadth outside the nipple line. Apex beat is best felt in the fifth interspace. Normal in character. Loud systolic murmur is heard at the apex, transmitted into the axilla. Pulmonic second is accentuated. Lungs are negative. Abdomen was not palpated. Blood pressure is 110. Pulse is 100 and regular. I went over the hygiene of pregnancy with her. Her physician is to watch her heart during the remainder of the pregnancy and also is to follow the analysis of the urine.

September 30. Measurement of the pelvis to-day showed it to be normal in all respects. She has had no swelling of the feet and with care does not get out of breath readily. Blood pressure is 110. Urinary analyses have all been normal. She apparently is in excellent condition.

November 8. Palpation shows a fair-sized baby. Back is on the right, small parts readily felt on the left, head is at the brim, freely movable. Fetal heart not heard but motion is felt. Vaginal examination shows the head can be pushed readily into the brim. Outlet is normal. Examination of the heart same as previous note. Apparently well compensated. Pulse 80. With her physician's consent she was put on tr. digitalis gtts. v twice a day.

November 23. Membranes ruptured November 20th at

four-thirty A.M. while she was asleep. She has had no pains. Fetal heart is 120, regular in the right lower quadrant. As the liquor was coming away freely she was kept in bed. This morning at eight the nurse telephoned that her patient began to have slight pains at four, that now they were coming regularly every twenty minutes and lasting thirty to fifty seconds, and that there was no show. I saw her at ten. Pulse is 80, good volume and tension and is regular. Pains are now coming every ten minutes and last one minute. There is a very slight show of blood. Palpation showed the position to be a right posterior. Head is well flexed. Biparietal is through the brim. Fetal heart is found very irregular. While I was listening, it dropped to 70 and then quickly rose to 180. At once it dropped back to 120 and for some minutes it stayed regular at 120. Vaginal examination made at once. No cord felt prolapsed. Os uteri admits one finger and cervix thick. Head is firmly engaged in the pelvis. Fetal heart was now listened to every twenty minutes and it remained absolutely regular at 120. At eleven the pains were coming every five minutes and lasting one minute. Uterus was soft between pains and not tender. Fetal heart showed no variation. Maternal pulse was 88.

At two-thirty she was having pains every three minutes which lasted one minute. Vaginal examination: — Os uteri dilated no more. Cervix little if any thinner than at the first examination. The presenting part, however, is distinctly lower. Patient's pulse was now 100. She had now been ten hours in labor, which during the last four hours was of excellent character, but she had made no advance in the dilatation of the os uteri. Her pulse had steadily risen. I therefore determined to put in the largest size Voorhees bag at once. An etherizer was sent for and as soon as he arrived the bag was readily passed through the os uteri and distended.

The pains stopped for half an hour and then began again regularly every three minutes. For a few minutes after the ether was given the pulse went to 120 but as soon as she was fully out of ether it became steady at 100.

The bag was expelled at quarter-past eight, having been in since quarter-past three, — five hours. The uterus now

was contracting well every two minutes. It was soft between pains, but slightly tender. The fetal heart was found to be 130 and the patient's pulse 110. Because of the steady rise in the maternal pulse, the slight rise in the fetal heart and the slight tenderness of the uterus I determined to deliver her at once. I felt that there was less danger in operating than in allowing her to go on for several hours more with the pulse steadily rising and the uterus beginning to become tender. The etherizer was again sent for and by the time he arrived all preparations were completed. She was scrubbed with soap and water before she was etherized so as to shorten as much as possible the etherization. As soon as she was under ether the vulva was quickly scrubbed with 70% alcohol. In dilating the perineum and determining the position a large amount of unmixed meconium came away. Fetal heart was listened to by the etherizer and found to be irregular and very rapid. The os uteri was fully dilatable and the position determined as an O. D. A. Forceps were quickly applied and traction brought the head downward, the anterior lip alone holding. Strong traction at once pulled the head by the cervix and no time was lost in extraction of the head. The baby was pallid and without tone. The heart was beating about 60 to the minute. The cord was not pulsating and it was at once clamped and cut. The nurse took the baby to resuscitate it in hot water after I had drained it. My etherizer told me to repair the perineum quickly as her condition did not warrant a careful repair, her pulse being now 140 and of poor volume. There was a tear along the descending ramus on the right and I put here two catgut sutures. The perineum had a deep second degree tear and I quickly passed three silkworm-gut sutures. The uterus was acting well and there was no bleeding; as she rallied slightly, pulse dropping to 130 and of better quality, I waited for the placenta. The etherizer had given her 1/20 of strychnia subcutaneously just after the delivery. The baby now was crying lustily and the nurse put him carefully away in good condition. The baby was born at 9:45 P.M. At 10:05 the placenta came away intact with all the membranes. The external sutures were now tied.

Ergot was at once given intramuscularly. She was quickly cleaned up, a sterile pad put on the vulva and at once put back to bed. Hot water bags put about her and the foot of the bed raised on chairs. Her pulse now was 130 and she was beginning to be restless. There was no external bleeding and the uterus was well contracted. She was given 1/6 of morphia subcutaneously and soon became quiet. She looked badly, very pale, and her breathing was very shallow. Heart sounds however were good and strong and the murmur easily heard. Pulse remained 130 and of slightly better quality. The volume steadily improved, but the rate did not drop. This continued until three A.M. when without warning she threw up her hands, rolled her eyes about and slightly stiffened the body. Pulse at the wrist was imperceptible. Caffein sodium benzoate gr. 1/2 was given her immediately. Heart sounds were clear but the murmur was faint. Percussion of heart area showed no dilatation to be present. In a moment she opened her eyes and said "I guess I fainted." Her pulse now felt at the wrist and it steadily improved in quality. She again grew restless and the morphia was repeated. By half-past four her pulse had dropped to 110, regular and of much better volume than at any time since the delivery. The improvement was held and at eight A.M. her pulse was still 110, but of good volume. She had taken four ounces of hot milk and had not vomited. Her condition was satisfactory and I left her, — uterus well contracted with normal amount of flowing. The nurse was told not to disturb her in any way until after my return in a few hours. Neither was the nurse allowed to wash the baby.

November 24. 11 A.M. She has slept at intervals since I left. The pulse remained 110. She looks distinctly better. Color has returned in her lips. The foot of the bed is still raised. As she is sleeping, orders were left with the nurse not to put on the binder until this afternoon. She is to have liquids every two hours. No stimulation ordered.

5 P.M. Has slept three hours since last note. Pulse 100. Temperature 99.6°. Uterus is well contracted and not tender. Patient has not voided, but there is no bladder distension

present. Heart sounds are strong and regular. Murmur is very distinct and the pulmonic second much louder than the aortic. Foot of the bed let down at this visit and there was no alteration of the pulse. Baby is in excellent condition and takes his half ounce of modified milk well every four hours. The baby has a small soft resilient mass on its left parietal bone posteriorly.

November 28. Marked improvement. Pulse has dropped to 80. Temperature has not been over 99°. Uterus is involuting well. No tenderness present. The vulva showed much edema the first thirty-six hours and when she voided there was much burning. The anus was very edematous and small linen cloths soaked in equal parts of hamamelis and water applied every two hours gave her much relief. Milk came in slowly last night and the baby nursed well this morning and is now to be nursed every two hours. The mass on the baby's parietal bone has increased so that it now is the size of a boy's fist. Its edges are limited by the parietal bone. It does not go beyond the sagittal or lambdoid sutures. At its outer edges is felt a definite firm ridge. No definite fluctuation is made out, but the mass is resilient. Diagnosis of a cephalhematoma is evident and the mother is told it would disappear with absolutely no treatment, in the course of six to eight weeks.

December 4. Continues to make a good convalescence. Temperature at no time over 99.2°, pulse varies from 80–90. Uterus cannot be felt above the symphysis. Lochia is slight and has a slight odor. Stitches removed. No tenderness when the perineum is pressed upon. The result is only fair.

January 15. She got out of bed on the twenty-first day and very slowly resumed her usual routine. The first two weeks after she was up she had marked frequency of urination and when the desire to pass water came she was unable to hold it. This frequency has steadily diminished but even now she has not complete control. She complains of much leucorrhea, which she says she has always had, but now is much worse. Vaginal examination:—On straining slight prolapse of the posterior wall. Marked prolapse of the anterior vaginal wall. The meatus is pouting. The perineal body is

only fair. The tear on the right ramus extended close to the urethra and the scar is here readily felt. Uterus is normal in position and very small. Inspection of the cervix shows a bilateral tear with marked erosion of the anterior lip which bleeds readily when touched. Cervix touched with Churchill's tincture of iodine. She was advised to take a two-quart douche of sterile water to which was added a tablespoonful of borax, once a day, and at the present time to do nothing more. To wait and see how much the tears are going to disable her. The baby has done consistently well and is on part bottle and part breast. She says she does not know when the cephalhematoma entirely disappeared as it was so gradual, but that now it has entirely gone and the two sides of the baby's head feel exactly alike.

April 30. She comes into the office to-day. She has complete control over the urine and there is no frequency. Her only complaint now is the leucorrhea which she says is thick and ropy, but with no color. Menstruation was established in February and is regular, every four weeks, and of the same characteristics as before her pregnancy. Vaginal examination as before. Cervix again touched with iodine.

She is still nursing the baby and it is only with difficulty that she can come to the office for local treatment. I advised her to make the best of the discomfort of the leucorrhea and to continue taking her douches. Except for the annoyance of the leucorrhea she is in excellent condition.

June 25. The leucorrhea now is very slight. She does not have to wear a pad, and she considers herself perfectly well. Vaginal examination shows the continued small uterus in normal position. The erosion on the anterior lip of the cervix is much smaller and now does not bleed when touched. It was painted again with iodine. Douches are to be continued, but she says the past month she has taken but one or two. She asked about the necessity of having the tears repaired and said that she wanted at least one more child. She was advised unhesitatingly not to be repaired for the present and if she had no symptoms from the tears not to at any time, surely not until she was through having children. I advised her not to have another

child at least for two years. If she then decided to have another baby, to see her medical adviser first and let him determine the condition of her heart at that time, and whether it was safe for her to go through another pregnancy.

Summary of Heart Disease in Pregnancy.

The two preceding cases are not extreme types of cardiac disease in pregnancy. In both of these cases compensation was good and never had been broken. When a patient presents herself for care the history whether she has ever had any of the acute infectious diseases should be determined. If it appears that the patient has had previous cardiac disease, the severity of the attack must be carefully investigated, — the length in bed and her subsequent disability.

Pregnancy occurring in a patient who has had several breaks in compensation is a much more serious complication than in one where the compensation always has been maintained. A first pregnancy, as shown by Case 69, gives a much more serious prognosis than if the patient has had several children. It is very difficult to say how any given heart will act during labor. If, because of the added strain to which it is subjected during pregnancy, a heart acts badly, one may be certain that unless the labor is extraordinarily easy the heart will go to pieces during labor. The average medical consultant knows but little about labor and the advice he gives is not always the best. The responsibility for the outcome of the case rests on the obstetrician and it falls upon him to lessen the strain on the already damaged heart as much as possible.

With patients who have a cardiac condition, digitalis should be given the last month. In one of the above cases the tincture was given, in the other a pill from the imported leaves was used. The latter is the best form, for if the drug is obtained from a reputable pharmacist the results obtained are more certain. Throughout pregnancy, careful oversight of the patient must be maintained. Rest, sleep and exercise in moderation are essential. All possible safeguards

must be thrown about the patient. Case 68 was able to have all possible help and her general condition when labor began was excellent. Among the poor, where the conditions are reversed, it will become necessary more often to interrupt pregnancy. The more severe the cardiac condition, the earlier will it become necessary to perform a therapeutic abortion. The more serious the disease the more necessary is it to empty the uterus with the least amount of shock. In early cases a quick vaginal Cæsarean section causes the least shock while in late cases where there is a possibility of obtaining a viable child the classical Cæsarean section is the operation of election. Had I performed a Cæsarean section on Case 69, she would be in much better condition to-day than she is now. This advice of performing a Cæsarean section in cardiac cases sounds very radical, but I am convinced that a damaged heart will bear a quick Cæsarean section much better, and the patient will make a better convalescence than if she is subjected to labor and an operative delivery from below.

The puerperium in cardiac cases varies in no way from normal cases unless the compensation is broken. Then special treatment of the heart is indicated. Nursing is allowed unless it disturbs the patient and keeps the pulse rate elevated. Exercises, at first passive, then active, help the general condition and should be insisted upon. If by them the pulse rate is accelerated and shortness of breath follows they must be stopped.

Pregnancy in patients with serious heart disease should be forbidden, but if the patient elects to become pregnant knowing the risks entailed, then she should go through it. The responsibility lies with the man and the woman, and they must not be led to expect that for slight provocation the uterus will be emptied. A pregnancy once begun must be safeguarded. The discomforts and the expense that a pregnancy coincident with heart disease may cause the patient are not sufficient reasons for emptying the uterus. Only when the life of the mother is endangered can such a pregnancy be interrupted.

Aortic lesions are more serious than mitral ones and mitral

regurgitation is the least serious of all. The lesion itself is not the criterion on which to go. The patient's past history, her willingness and ability to do what is right is more important. Each case must be judged upon its own merits. No rigid rules can be laid down. The one fundamental point, however, is that throughout the pregnancy the patient must be under constant intelligent oversight, and if complications then develop they must be dealt with as they arise. In the labor one idea must be foremost, to reduce as much as possible the work of the heart, and this, therefore, means to allow practically no bearing down in the second stage. If there is the slightest delay, forceps should be used. In Case 68 there was no indication for forceps because there was such a short second stage. We were prepared to deliver her at once, but it proved to be unnecessary.

SECTION XXI.

SCOPOLAMINE AND MORPHINE ANÆSTHESIA.

Case 70. SCOPOLAMINE AND MORPHINE ANÆSTHESIA IN LABOR. July 24. This patient has had a normal pregnancy except that she has a very great apprehension of the outcome of the delivery. This is her first pregnancy and she is due for delivery about August 12th. Her pelvic measurements are all normal. Blood pressure is normal and urinary analysis normal.

August 7. This morning about nine the membranes ruptured without pains. An hour later she had her first pain. It was very sharp and hurt her much. She started at once in good labor, pains coming every five minutes and lasting from forty-five seconds to a minute and a quarter. With each pain she cried out. Her pulse between pains was 76 but after each pain it ranged from 90 to 100. Palpation showed an O.L.A. position, head low in the pelvis and well flexed. Fetal heart was 130 in the left lower quadrant. At 10.30 A.M. I gave her $\frac{1}{200}$ gr. of scopolamine and $\frac{1}{6}$ gr. of morphia subcutaneously. The room was darkened and she was told to try to go to sleep. In the course of twenty minutes she became quiet but with each pain would moan. When questions were put to her at about 11.30 she would answer intelligently but had little recollection of previous questions. At twelve noon we noticed that she was becoming a little restless. At 12.15 a second dose of scopolamine, $\frac{1}{200}$ gr., was given and she again became quiet except when the pains were present. The pains now were coming every three minutes. Fetal heart was 136 to the minute. Rectal examination showed the cervix to be very thin and os dilated two-thirds.

Pains continued coming at three-minute intervals and were now lasting a minute to a minute and a half. At one P.M. definite bulging was first seen. Marked show. The patient

now began to strain with nearly every pain. At one-twenty she began to be more and more restless and to cry out loudly with each pain. At one-thirty on separating the labia the child's scalp could be seen. Fetal heart was now 160. I did not care to delay the delivery any longer so under ether anæsthesia I did a very simple low forceps. At the very end I hurried the extraction of the head as the circulation in the scalp was poor. The baby gasped at once and in a few minutes cried lustily. With the birth of the baby large masses of meconium came away. The placenta came away intact with all membranes some twenty minutes later and a very slight internal tear of the perineum was repaired with chromic catgut.

August 8. Questioned to-day about her labor, she says she has very vague remembrance of what went on after the first dose of scopolamine. The second injection she does not remember receiving and neither does she remember when ether was begun.

August 28. Has made an excellent convalescence. At the present time there is no discharge and her condition is satisfactory. The baby is nursing and gaining.

September 1. Vaginal examination to-day showed the tear of the perineum well healed. Uterus normal position; slight bilateral tear of the cervix; nothing on the sides. Baby has done uniformly well and both patients are discharged to their family physician.

This case is a fairly typical example of the use of scopolamine. There are certain points in technique in the use of scopolamine that must be observed and they are in a word these: Pains must be well established in a primipara every four to five minutes, in a multipara every five to seven minutes and lasting about thirty seconds. Then $\frac{1}{200}$ gr. of scopolamine and $\frac{1}{6}$ gr. of morphia or in some cases $\frac{1}{2}$ gr. narcophin is given. Usually the effect from these drugs is seen in from fifteen to twenty minutes. A short while later the patient's memory is tested by asking some simple pertinent question. If she remembers and answers correctly a second dose of scopolamine should be given. Usually one-half of

the first dose is given but morphia is not repeated. If the memory is lost the second dose of scopolamine should be held off until by further questioning it is seen that the memory is returning. The memory test Gauss insists is an important part in the technique scopolamine anæsthesia. This condition of amnesia should be obtained slowly by repeated doses.

The furor that passed over this country a year ago when the lay press tried to force "twilight sleep" upon the medical profession has to some extent died down but there still are a few patients that demand it. It takes from one and a half to three hours to get scopolamine acting satisfactorily, and it is evident in many multiparous cases, where the pains do not come regularly every five to seven minutes until late in the labor, that it would be difficult, if not impossible, to have the patient sufficiently under the influence of scopolamine to be of any value, before the baby was born. In the above case the circulation in the scalp was not good and I hurried the delivery. Whether this was a true picture of oligopnea or slight asphyxia, which is so common in "twilight sleep" cases, or whether it was due to the fact that the membranes were ruptured and there was some compression of the cord, is difficult to say. This condition of oligopnea is one that, although alarming, is not necessarily dangerous, but means to resuscitate the baby must always be present when "twilight sleep" is used. Whether or not the use of "twilight sleep" reduces the number of forceps operations that are done, to my mind is immaterial, provided the operator knows how to deliver a patient carefully with forceps and without tears. I am rather inclined to think that the risk of untrained men using "twilight sleep" is greater than the risk of these men doing a moderately good forceps delivery.

Up to within a relatively short time ago it was impossible to obtain a good preparation of scopolamine. A further complication in the use of scopolamine is that the effect on any individual patient is always at first unknown and that is one of the chief reasons why, in inducing amnesia, the doses must be small and given slowly. There are certain side effects which sometimes follow the giving of scopolamine. The reddening of the face certainly is not alarming. Thirst

may be most annoying. The motor excitement is at times tremendous, necessitating several nurses to hold the patient in restraint. Fortunately, this is an uncommon complication but no one can foretell which patient will show it. The hallucinations do occur but Kronig says that "these are of no material importance so long as the relations of the mother do not remain in the room, for these states of excitability make an unpleasant impression on the family. In consequence of these we only carry on the method of "twilight sleep" in cases where the relatives promise to be out of the room during the whole time of birth."

It has been claimed for "twilight sleep" that there is less frequency of severe perineal tears and if that is a fact it is probably due to the complete and slow dilatation of the birth canal. The lactation period shows no harmful effects from the drug. There are certain definite contra-indications for the use of scopolamine. The first and most important is where there is primary uterine inertia. Kronig and Gauss further avoid using it in the cases where there is disturbance of consciousness, high-grade pelvic contractions, illness with fever and when communication with the patient cannot be had on account of inability to understand the language spoken. I have already spoken of the inability to have "twilight sleep" satisfactorily induced where labor is rapid.

Some of the physicians, I do not by any means mean to say all, who have taken up twilight sleep, have done so purely for commercial reasons. Some who have never had any great experience in obstetrics have rushed into "twilight sleep," posing as specialists, and these are the ones who have done harm to obstetrics and to the placing of "twilight sleep" on a definite scientific basis in this country. It has a small place in obstetrics and the patient who is high-strung and without any nerve force may be helped materially by the use of scopolamine, but for the general run of cases I am confident that other means of analgesia are much more satisfactory.

SECTION XXII.

PUERPERAL INSANITY.

Case 71. PUERPERAL INSANITY. This patient is seen for the first time October 28th. She gives the following history of her pregnancy: — She is at the end of the seventh month of her first pregnancy. Her last menstruation began on March 19th. She has been perfectly well during her pregnancy and has been under no medical supervision. Her menstruation appeared when she was twelve years old. It comes regularly every twenty-eight days and lasts four days. It is unaccompanied by pain. She has always been well except for a slight nervous breakdown while she was at college three years ago.

For some unaccountable reason she has reckoned that her baby is coming January 24th. If she is right in her dates she will be due for delivery the week of December 22nd.

The remainder of her pregnancy is without note. Examination of the pelvis showed it to be normal.

December 28. Patient started in very slight labor this morning at three. At four she went into a private hospital. I saw her at nine. She was then having pains every five minutes, lasting forty seconds. Pulse is recorded as 60 and temperature 98.6°. The membranes ruptured shortly before I saw her. Meconium-stained fluid was coming from the vagina.

PALPATION OF THE ABDOMEN: — Fair-sized baby lying in a left position. Biparietal diameter is through the brim. Uterus is relaxing well between the pains. Fetal heart is 130 in left lower quadrant. Vaginal examination: — Attempt to make an examination caused so much pain that nothing was determined and she was at once given primary ether. The head was found on the perineum, cervix thick, os uteri dilated one inch. She continued in excellent labor. Fetal heart stayed regular. At twelve o'clock, patient's pulse had

risen to 90. Uterus was relaxing well and there was beginning to be a slight show. Shortly after one she began bearing down with each pain and there was very slight bulging of the perineum. At half-past two her pulse had risen to 110 and the fetal heart was found to be 150. I therefore decided to deliver her at once. Preparations were completed and she was etherized. The os uteri was not felt; it had retracted behind the occiput. The sagittal suture was in the antero-posterior diameter. Forceps were readily applied and a very easy extraction followed. The baby's cord was not pulsating and it was at once clamped and cut. The baby was drained, and it soon cried lustily. It was given to the nurse and surrounded by blankets and hot water bottles. Examination of the perineum showed a slight superficial internal tear which was at once repaired with one chromic catgut suture. The baby was born at 3:15 P.M. The placenta came away intact with all the membranes at 3:45 P.M. The patient's pulse after delivery was 120. Uterus acted well. She was at once cleaned up, a sterile pad was put on the vulva and she was put back to bed. Pulse soon dropped to 100. The baby, a girl, weighed six pounds and fifteen ounces. I left the patient at half-past five in excellent condition.

January 2. Is making an excellent convalescence in every respect. Baby is nursing and is satisfied. The patient is talkative and slightly excited. She frankly said she was excited. "I have not quite got hold of myself," she said.

January 3. 12:30 A.M. Telephone from the hospital saying the patient is restless and not sleeping and is very talkative. She was ordered trional gr. x.

1:05 A.M. Telephone saying the patient was very much worried about something, and wanted to see me at once. I saw her at half-past one. She at once began talking very rapidly, telling me of the dislike she had for a new nurse that had come into her room early in the evening. She said that her thoughts were coming fast and that she could not tell them all to me. She talked rationally, but very fast. She had no hallucinations. Her pulse was 100. A special nurse was at once sent for. The patient was given chloral

hydrate gr. x and potassium bromide gr. xl by rectum. In the hospital order book it was written that she must not be left alone a moment. I made no physical examination at this time. The medicine had no effect upon her. She talked incessantly and was very restless, sitting up and attempting now and then to get out of bed. At three A.M. she was so noisy and difficult to manage that she was given morphia gr. 1/4 subcutaneously. She did not close her eyes all night, but was a little more easy to manage after the morphia was given. The husband came to the hospital at ten and the situation was fully explained to him. I told him that at the present moment I was unwilling to say whether the condition was simply a sudden burst of excitement or whether it was the beginning of a long and serious illness, but that it more likely was the latter. The importance of having her watched every moment I made very clear to him. The question of a consultation with a neurologist I left for him to decide, but for the present I thought it unnecessary.

The patient took a pronounced dislike to the first nurse and she was at once displaced for one of more attractive and stronger personality. From the husband I found that the illness she had had at college had taken the form of severe depression; that she never could get through her college work, that all her friends were giving her up, and that she was of no use in this world. This illness lasted in all about six months, but only for one month did she talk of her being of no use in the world.

I determined to continue nursing the baby for another twenty-four hours for now she was quiet and rational. Temperature this morning 100.2°, pulse 96. Pupils are widely dilated and react slowly to light. Obstetrically there is nothing wrong. Her bowels are moving each day and there is sufficient urine. She is to be given a soft solid diet and potassium bromide gr. xl every two hours for three doses by rectum.

January 4. Yesterday afternoon as the result of the bromide she slept for an hour and last night she slept in all six hours. She is taking her nourishment well. She said she was seeing myriads of sheep going over the bed and

walls, that it was not at all unpleasant, for she said seeing them soothed her. The baby to-day was given alternate feedings of the bottle.

January 5. She slept in all five hours last night. When awake she was quiet. Temperature is normal. Pulse 100. Her pupils are widely dilated. She talks quietly and answers slowly the questions put to her. She said now that nothing was troubling her except one thing, and wanted to know if she could speak to me about it. She then went on as if prefacing her question, but she had no question to put to me.

January 6. Yesterday afternoon and evening she became very restless, and was given forty grains of the triple bromides every two hours for four doses. She slept last night for seven hours. Her temperature is normal. Pulse is 110. This morning she talked quietly and intelligently for about ten minutes and when I was about to go she said, "There is one thing I want to ask you." I told her to ask me and she then said, "That is what I am trying to think, what it is. . . . Oh, yes, I did not want you. . . . I won't be so ambitious. That little plant over there (pointing to one on the table) suggested it to me. I want to go slow. I am a bit weary." She then stopped and would not answer any more questions. To-day was the first time that this inability to hold her thoughts came out so clearly. She answers questions slowly, but correctly. The baby was not put to the breast last night and she did not notice that it was not brought to her. I put the baby entirely on the bottle to-day. The husband to-day was definitely told that the condition was one of so-called puerperal insanity, and in all probability it would be three or four months, possibly six, before she would be well again, and that he must determine whether to keep her at home or let her go to an institution, that if she went to an institution she must be committed for she was in no condition to go as a voluntary patient.

January 8. I asked to-day for a consultation with a neurologist and he saw her this afternoon. She talked freely with him, at once placed him as a nerve specialist, but did not think it strange he had come to see her. She was very

slow to answer his questions, and at times was unable to hold her thought to the question. The consultant confirmed the diagnosis, and went fully with the husband into the importance of insistent watching. He told me to make use of the bromides as occasion arose, and not to hesitate to use hyoscine hydrobromate gr. 1/100 in order to quiet her.

January 11. Each day she is becoming harder to manage. Tries constantly to get out of bed. Says she is sure she must not talk, — "must follow the dictates of her heart." Yet she talks incessantly. Breasts have dried up without any treatment and with no trouble. Her temperature is normal but the pulse is 128. Murmur heard to-day over the pulmonic area. No enlargement of the heart. Nothing found on careful physical examination, except that her pupils are still widely dilated. She is sleeping poorly, not more than four hours in the twenty-four. With the aid of hyoscine she is kept fairly quiet. Up to to-day she has eaten very well, but to-day refused absolutely to take anything for two or three hours at a time, and then she would take whatever was offered her. To-day she would not void her urine for twelve hours.

January 13. Patient moved to-day from the hospital to her home. She realized she was at home and tried several times to say so, but all we could make out were the words "glad" and "home." She now has absolutely no continuity of thought. She has frequent outbursts of laughing or crying. She is praying for minutes at a time and then becomes silent, and will not show the slightest willingness to talk. To-day she began to hold her legs and arms rigid. At times she refuses to eat, but in the twenty-four hours she gets a sufficient amount of nourishment. When the arms and legs are not held rigid they are in constant motion; especially marked is the picking of the hands at the bedclothes.

January 18. Her pulse last night rose to 130. Temperature 98.8°, respirations 32. Physical examination absolutely negative except for a slight foul-smelling discharge from the vagina. For this she was given a sterile water vaginal douche. Pupils are still widely dilated. Knee-jerks

are present and normal. She is holding her urine longer and longer, but as yet she has not been catheterized as a large enema has always induced her to void. She has had hyoscine generally once a day, occasionally twice and once she had it three times in the twenty-four hours. Bromides have varied much, — from nothing up to one hundred and forty grains in the twenty-four hours. Morphia has been given in the last ten days only once, and then only because the nurse was unable to manage her, and the husband was away.

January 23. Patient has slept constantly for the last four days, roused only to take nourishment every four hours. She is eating from four to six eggs a day, toast, cereal, vegetables and the simple desserts, together with at least a quart of milk each twenty-four hours. Were it not for the absolute devotion of the two nurses the amount of food taken would be much less, for she has to be persuaded to take all of it, and much of the time after it is put in her mouth her lips have to be held or she would spit it all out. Her pulse to-day is 100, temperature normal, respirations 28. There is now no odor to the vaginal discharge which is very slight in amount. At times she is incontinent of both urine and feces. She has had no drugs to quiet her since the 19th of January.

January 31. She has shown steady improvement the past week. The pupils now are normal in size. This morning when I saw her she held out her hand to me and tried to say something which was unintelligible, and then added "Oh well, what is the use anyway." There has been a steady though slow drop in the pulse line. This morning it was 90. She now will take solid food much better than liquids. She is on the whole eating excellently. It is harder to persuade her to eat in the mornings than in the afternoons and evenings. She now is constantly trying to ask questions, but is markedly confused. This morning she tried to get up out of bed saying she had been there long enough. When she was asked to lie down she did so with no objection.

February 12. There has been a steady but slight improvement. She is eating splendidly. Bowels move daily with two aloin, strychnia and belladonna pills and an enema

in the morning. She has not been incontinent for over two weeks. This morning she asked to have her mouth washed out, and the nurse suggested that she should brush her own teeth, which she at once did. She is less and less confused, her clear periods are longer and longer and she talks intelligently with her husband every day. She asks for her mother and father, but has as yet said nothing about her baby. She now answers questions with but little delay, and does everything the nurses ask her. She is sleeping from seven to nine hours without waking at night and has many short naps during the day.

February 22. The night nurse was taken off two days ago. My consultant saw the patient again to-day and was enthusiastic about her physical condition. He found her reactions all present and normal. She, however, would answer none of his questions, but remained silent the entire time, although before and after he saw her she talked freely. She is urged to keep quiet and do nothing but sleep and eat. She has had no drugs for the past month.

March 10. On March first her pulse dropped to 80, but from then to now it has steadily risen until to-day it varied from 120–140. Beginning yesterday she became dull and silent. To-day she is incontinent both of feces and of urine. Pupils are again dilated, otherwise physical examination is negative.

March 17. Two days ago she refused to eat anything, and she was put on nutrient enemata twice a day. Yesterday she took fifteen ounces of milk by mouth. To-day, after much urging, she was forced to take thirty-four ounces of milk, six eggs and sixteen ounces of water. She is sleeping but three or four hours in the twenty-four.

March 25. Refuses all food. Holds it in her mouth indefinitely and then spits it out. Constantly passing gas, feces and urine in the bed, and the nutrients cannot be given her. This afternoon, tried to feed her by the stomach tube, but she fought so that I could not pass it. She then said that she would "eat something without doing that." She immediately did so, but only after much urging.

To-day she again began to hold herself rigid. She gets into one position and stays there for hours or until moved to

another. She holds her elbows and knees flexed most of the time. All passive motion or massage she resists. Respirations are at times almost of Cheyne-Stokes type. Physical examination negative.

March 27. Her father saw her to-day and she recognized him, put her arms about his neck and apparently was delighted to see him. She at once asked him "what are they trying to do to me." Told him they were poisoning her, and that was why she would not eat better. She then said she would eat anything for him.

March 30. Distinct improvement. Is again eating but only when her father feeds her. Is sleeping from six to eight hours at night, but none during the day. Her pulse is slowly coming down, and this morning it was 100. Usually it is about 110, of good volume and tension. For the past two days there has been present a fine tremor of her lips, hands and arms. None of the legs. This morning it is much less marked. Pupils have again become smaller.

April 5. She still has delusions of poisoning, but with persuasion they are overcome, and she now eats everything that the nurse brings her. Yesterday for the first time she mentioned her baby, but before she was answered she wandered off on to something else. For the last week she has been taken out on the piazza daily, and she plainly showed she was pleased. She is sitting up in bed to eat her meals. She is smiling and talking more and more intelligently. She has steadily fought all massage or passive motions. To-day she stood up by the bed for a few moments, and then said her legs felt "queer." From this remark we persuaded her to let the nurse give her massage morning and night.

April 10. At times she is quite talkative, but not consistently clear. She is eating and sleeping splendidly. She is inclined to lie constantly with her legs drawn up in marked flexion if she is not watched. Whenever I see her she refuses to answer any questions. Several times at night in the past week she has been restless for short periods, throwing off the bedclothes and attempting to get up. But with persuasion and an occasional sharp order she at once becomes reasonable.

April 19. To-day she put out her hand to me and called me by name, the first time since early in her illness. She talked intelligently, and asked many searching questions all of which were answered truthfully. She then said "I wish I could have my baby." It was explained to her why she could not and she accepted the explanation without question.

May 6. Marked and rapid improvement. She is walking about her home and gaining steadily in every respect. Three days ago she showed a definite hostility to her nurse for the first time, and the reason for it she told her husband was because of the expense of having her. Her husband satisfactorily explained to her the necessity of having the nurse longer, and then the hostility at once disappeared.

May 23. The improvement was so great that on the 14th she went with her nurse and husband to his father's home, where she could be out of doors in the country each day. Her baby was there and from all points of view it seemed much the best plan. She made the trip with ease and everything went well until to-day when the nurse wrote "that there was a marked change in her mental condition. This morning she forgot to give the baby her bath even though she spoke of it five minutes before. She went for the bottle, but forgot to heat the milk. She comprehends very slowly what is said to her. She shows no affection for the baby. Physically she is doing splendidly, walking well and eating and sleeping."

I telegraphed at once that they should come home for she undoubtedly was having a relapse.

May 25. The husband and nurse brought her home without any difficulty last night. This morning I found her lying quietly in bed, pupils widely dilated. She showed no signs of recognizing me. She would answer no questions. She would not put out her tongue. Her pulse is 130, of fair volume and tension. Temperature normal. Physical examination is negative. She has improved markedly in her musculature. I now brought up the question of her going to an institution until this relapse was over, and the husband said he wanted time to think it over.

May 26. She did not sleep last night at all, but lay

quietly in bed. It is only with much persuasion that she will eat at all. She is incontinent of feces, but holds her urine indefinitely or until an enema is given her. Her feet, legs, arms, and hands are rigid. Marked but fine tremor of the lips and eyelids. Pupils are widely dilated and react very slowly. It is difficult to obtain the knee-jerks because of her rigidity. She is making many foolish remarks and seemingly does not understand anything that is said to her.

May 30. Marked improvement the past two days. Talks rationally with her husband on all subjects. There is now practically no rigidity. She is eating everything which is brought to her, but is sleeping only from five to six hours in the twenty-four. Pulse is 90.

June 3. Has improved so much that to-day she sat up to eat one meal. Her husband yesterday spoke to her about going to the hospital until she became entirely well again. She at once fell in with the suggestion for she realizes fully the great expense that her husband has been under, and says she wants to do everything she can to lessen it and get well quickly. When I saw her this afternoon she told me she wanted to go to the hospital.

June 4. This morning when I came for her in the automobile she was dressed, ready, and glad to go to the hospital where a room had been engaged for her. She walked downstairs and got into the automobile, and with her husband and nurse we went out to the hospital. She readily signed the necessary papers for admission as a voluntary patient, and we left her seemingly very happy to be there.

The final outcome of this case was that a week after she entered the hospital she had a very serious relapse, and for some days the physicians were doubtful whether she would live. She, however, gradually improved and by September was discharged as well. From then to now, over three years, she has remained perfectly well.

Summary of Puerperal Insanity.

The above recorded case is an excellent example of one type of so-called puerperal insanity. The name puerperal insanity is given it simply because the mental upset appears

in the puerperium. When it occurs during pregnancy it is called gestational insanity, or if during lactation, the insanity of lactation. According to the present theories as to the cause of this type of insanity it is not thought that pregnancy is the fundamental cause. The mental derangement is latent in the patient, and anything which upsets that patient's equilibrium will be the exciting cause of the present outburst, but it is not to be regarded as the fundamental one.

In well-marked cases of this condition the diagnosis is very easy, but when the symptoms are few and the derangement is slight the diagnosis is difficult and must not be made definitely unless one is positive of the condition he has to deal with. The two types that obstetricians usually meet are the excited, maniacal, and the depressed, mute type. Either type may predominate or there may be greater or less fusion of the characteristics of the two types.

Whether the diagnosis is clear or not a consultation is generally advisable with a neurologist in order that the pros and cons of treatment may be thoroughly gone into and the patient's condition carefully safeguarded. Also the physician must protect himself from any possible criticism. The first suggestion that the patient may be beginning an upset is her wakefulness, or she may make a remark that has no connection with the conversation that is then going on. Little changes from her known previous condition are suggestive. These changes may be gradual and difficult to recognize. Of the opposite type is the acute onset; the patient in a few moments becomes a raving maniac, who may do serious damage to herself, her baby, or her companions if not quickly restrained. As soon as the diagnosis is made the question of institutional or home treatment comes up. There can be no argument that home treatment is unsatisfactory unless the home is turned into a hospital. The objection that the family so often raises to hospital care and the necessity for commitment makes the physician many times keep the patient at home when he knows she should go to the hospital. In the above recorded case the patient's family would not listen to the patient going to a hospital. If the patient stays at home the necessity for adequate nursing must be in-

sisted upon. A day and a night nurse, with members of the family or the servants to help the nurses, are absolutely essential for the management of such a patient. The necessity for more nurses may arise at any moment. All orders which the physician gives must be written so that there may be no misunderstanding. A physician looking after such a case must not assume that the nurse will do the proper things without orders. The orders must be given to the minutest detail. The first and most important order in every case of this type is that under no circumstances whatsoever is the patient to be left alone. The mere presence in the room of the nurse is not sufficient. She must so place herself that the patient cannot elude her, for the cunning and alacrity with which these patients act when once the impulse comes to their disordered mind is surprising.

Careful nursing is the most important part in the treatment of this condition. It is upon the nurses that the hard work falls. Drugs must be used as little as possible. In the above case they were used only when the patient became so noisy that other patients were disturbed, or when there was not enough help to restrain the patient from doing herself harm. Food in an easily digested form is the sheet anchor in this disease. If the patient will not eat she must be fed, either by a stomach or nasal tube. There is no room for argument about the necessity for food. Not infrequently after the patient is forcibly fed she will thereafter take the food offered her without resistance. Prolonged hot baths will quiet the patient many times, but if the patient is kept at home the difficulty in giving them is great unless there is sufficient help. In no type of sickness is good nursing more essential. The lack of control over the sphincters necessitates constant attention if the patient is not to develop serious bed-sores. The musculature may be aided by massage and passive motions. When recovery starts it usually is progressive; careful oversight in the convalescence is important and the patient must be made to realize that she must go slowly and that a slow gradual complete recovery is more essential than a quick one. When the diagnosis is definitely established the baby should be

taken from the mother's breast. If the baby is nursed a few times the nurse must stand close to the baby the entire time it is with the mother, for the impulse to destroy may at any moment appear, and the baby's life must be safeguarded.

The husband, as recovery takes place, will ask whether other pregnancies should follow. Pregnancy is not the basic cause of puerperal insanity. The mother has unquestionably an unstable mental equilibrium, and any added strain may bring on another outbreak, while if she leads a normal, quiet hygienic life she may continue for years a useful member of society. If our present theories as to the fundamental causes of this type of insanity are correct then she should bear no more children.

SECTION XXIII.

THE HYDROSTATIC DILATING BAGS.

Case 72. VOORHEES BAG. INTERMEDIATE FORCEPS. Patient is seen for the first time November 23rd. She says that she is two and a half months pregnant, and that she is expecting the time of her third period December first. Her last menstruation was on September 9th. This will make delivery due about the 15th to the 19th of the following June.

She went through her pregnancy without a great deal of difficulty. She was apprehensive and stood the discomforts of her pregnancy only fairly well. She has reported each month, and has brought in a specimen regularly. From the sixth month she has sent a specimen into the office regularly on the fifteenth of every month, and has also brought one when she came on the first of each month. All urinary examinations have been normal. Blood pressure has never been over 130. On May 17th measurement of the pelvis gave the following results: — crests 28 cm., spines 23 cm., external conjugate 19 cm. Fetal heart is heard in the right lower quadrant, 120 to the minute. The head is at the brim, not engaged.

June 2. Husband telephones at 10 P.M. saying his wife has just told him that for the last two days she has had a slight discharge of water coming now and then from the vagina. She did not think it was important, and therefore had not said anything about it. He says she is having pains every eight minutes and he thinks she is beginning her labor. I asked another physician to see her at once, as I was out of town. He reported at twelve o'clock that the cervix was partially taken up. External os admits one finger. Head is high. Patient is having definite contractions every eight minutes and there is liquor coming away. It is his opinion that she is starting in labor. When I got to her at half-past two in the morning of June third she was

having pains only once every half hour and with but very slight contractions of the uterus. She was nervous and apprehensive. Palpation of the abdomen showed that the head was now firmly fixed at the brim, but the biparietal diameter was not through the inlet. Her temperature was 98.8° and pulse 90. I gave her 1/6 gr. of morphia subcutaneously at once as she was not in true labor. From 3:30 A.M. until 7 A.M. she slept. At nine o'clock pains started in again every twenty minutes, but lasted only thirty seconds. There was no show. This continued during the morning. Pains came regularly every half hour to twenty minutes, but at no time were they at all severe. Uterus relaxed well and there was no tenderness. Patient was not in good labor. At 2 P.M. pains started in regularly every eight minutes, lasting one-half to three-quarters of a minute. Uterus contracted well. Vaginal examination at three P.M. showed the head distinctly lower than the physician had, the night before, described it. Cervix is thick and the os dilatable one inch. The promontory cannot be reached. Ischial spines are prominent. The arch is normal and the tuberosities of the ischia are not contracted. From now until nine o'clock the pains came steadily at nine minute intervals lasting one minute. The character of the pains was not severe, however, but the contractions were good. There had been no show and there was very little liquor coming away. Fetal heart listened to once an hour and it remained regular. At nine o'clock palpation showed that the head had not descended. Vaginal examination showed that the os uteri had dilated no more. The cervix was thick. In over six hours there had been no progress and I decided to put in, at once, a large-sized Voorhees bag under ether. At 9:45 everything was ready and she was etherized. Vagina wiped out thoroughly with 70% alcohol. Perineum was dilated. Examination showed the cervix thick and rigid. The os was dilated about one inch. A French hook was placed on the anterior lip of the cervix and the handle held steady by the nurse. With two fingers of the left hand at the posterior lip of the cervix a large-sized bag was readily passed along the gloved hand in through the cervix by the aid of a curved

broad ligament clamp. It was then distended with sterile water, by using an eight-ounce metal syringe. As the bag was distended the handles of the broad ligament clamp separated and the clamp was then removed leaving the bag in utero. The tube was tied tightly with bobbin so there was no leakage. A sterile pad put over the vulva with a hole in its center for the tube to come through. At half-past ten the patient was out of ether and the pains were coming at intervals of five minutes, lasting three-quarters of a minute and were very severe. The fetal heart immediately after the insertion of the bag went to 160, but inside of twenty minutes settled down to 120 and remained there regularly. From eleven on she had obstetrical ether and with each pain the tube, protruding through the vulval pad, was gently pulled on. At half-past twelve the bag came out. Palpation from above showed the head had descended materially and that the biparietal now was well down through the brim. At 1 A.M. pains were coming with intervals of a minute lasting one and one-half minutes. Fetal heart was regular. Maternal pulse had gone to 120. Uterus relaxed poorly between pains and the lower segment was distinctly tender. I then decided to deliver her because of the relatively long labor which she had had, the rising pulse and the condition of the uterus. She was etherized and then placed in lithotomy position. She was carefully scrubbed up. Perineum was thoroughly dilated so that the closed fist could readily be flexed out. Position was found to be O. D. A. The cervix was three-quarters dilated and very soft and thin. The posterior lip could just be felt but the anterior was found down between the head and the symphysis.

The right blade was applied first and was readily placed, and then the left blade was placed opposite to the first. Rotating the handle of the left blade around the handle of the right the forceps readily locked. On the first tentative traction it was seen that it was the anterior lip that held the head from coming down. This was gradually pushed back by gentle pressure, and with very slight traction on the head downward. As the anterior lip retracted, the head slowly came down to the perineum and rotated fully to the arch.

The perineum gradually stretched up. Circulation in the scalp was good and delivery was slowly finished. It was rather a difficult intermediate forceps. The baby cried at once. The application was poor. The left blade of the forceps was over the left eye. The right blade was over the right ear. When the cord stopped pulsating it was clamped and cut. There was a first degree median perineal tear. Placenta came away intact with all the membranes without any pressure whatsoever twenty-five minutes after the birth of the baby. Two deep catgut sutures of chromic No. 2 were placed about the base of the tear, bringing the deepest part of the tear into good approximation. Two silkworm-gut sutures were then passed so as to include the entire tear and then tied and left long. There was no bleeding, and the uterus acted well. She made a fair recovery from ether, vomiting two or three times. Pulse at delivery was 120. It steadily came down and remained of good volume. I left her at 4:30 with a pulse of 90. Uterus well contracted and no bleeding; in excellent condition. The baby weighed eight pounds, and was in excellent condition.

June 6. She coughed much last night and was relieved by codeine sulphate gr. 1/4 repeated in one hour. Her temperature is normal, pulse 72. Lochia is sufficient, good color and no odor. No tenderness over the uterus. The breasts are large and pendulous. There is no milk in them. The baby moves its arms and legs well. The forceps mark over the eye is much better than yesterday. The edema is less and no secretion is present.

June 10. Forceps mark has now practically cleared up. Milk has come in and the baby is nursing regularly. Temperature is normal and pulse varies from 68–78. The stitches which she complained of three days ago are now giving her no discomfort and there is no tenderness about the perineum. The external stitches look well.

June 12. The uterus cannot be felt above the symphysis. The lochia is very slight. The breasts are filling up between feedings and the baby is satisfied. Stitches were removed to-day and apparently a good result obtained.

Patient made a good convalescence and began her exer-

cises on the fourteenth day and kept them up, faithfully, until she got up on the twenty-first day. Vaginal examination in the fourth week showed no bulging on straining of either the anterior or posterior vaginal wall. Perineum well healed and a good result. Uterus normal in position and size and is freely movable. Cervix shows a slight stellate tear to be present, with a thick stringy bloody mucous plug protruding. A children's specialist is to have charge of the baby and the patient is discharged to her own family physician in excellent condition.

Summary of the Use of Hydrostatic Dilating Bags.

The use of the hydrostatic dilating bag is not a new procedure, but to Voorhees of New York is due its present popularity. There are other dilating bags on the market, but none is more satisfactory than this one of Voorhees. Voorhees in his original communication (Medical Record, Sept. 8, 1900) recommends the use of the small-sized bag first and when this comes out the insertion of the next larger size until dilatation is completed. The amount of manipulation that these procedures cause the patient, in my opinion, is unnecessary, and in my private and hospital work I never do it. If the indication for putting in a bag is clear then I prefer to etherize the patient and put in the large-size bag at once. In this way one is able to scrub out the vagina with 70% alcohol and place the bag in position, causing the patient a minimum amount of discomfort.

The indications for the use of hydrostatic bags are many and varied. Many physicians can see no good in them, and they even go further and say they are the cause of sepsis, malpositions of the fetus and their use "meddlesome obstetrics." I have used them either personally or ordered their use by my house officers very many times, and I have never regretted it. I regard their intelligent use one of the greatest advances in modern obstetrics. The above case is an excellent example of their use. Given a case with ruptured or unruptured membranes and progress not being made, the introduction of a bag will materially help labor. In not a few cases the patients will deliver themselves shortly after

the bag is expelled, and when operative interference is necessary the cervix is always soft and if not fully dilated the dilatation is very readily accomplished manually.

Previous cases (Cases 27, 40, 49, 50, 51, 69 and 74), all show other conditions where the bags may be used. If the bag is inserted the physician must stay with the patient the entire time it is within the uterus. Careful watch of the fetal heart must be kept and the action of the uterus followed.

The necessary instruments for the insertion of the bag are — the bag, a curved broad ligament clamp, a French hook (the vulsellum forcep tears out too readily), a hemostat, a pair of scissors, tape, an eight-ounce metal syringe, boiled water, a pair of gloves, a package of sponges and a sterile pad and gown.

The technique of inserting the bag is as follows: The patient in labor has already been shaved, but if not in labor she must be shaved and an enema given before any attempt to insert the bag is made. The patient is put in moderate lithotomy position and the vulva carefully washed as in preparation for normal delivery (described on page 107). The operator fills the syringe full of boiled water, all air is expelled. The large-sized Voorhees bag holds eight ounces of water and that amount of water is put in after it is in place. If the physician uses other kinds or sizes he must find out how much the bag holds before he attempts to distend it within the uterus. If the patient is a multipara or a primipara with cervix dilated about one inch, many times the vagina may be scrubbed out with alcohol, and the bag inserted under a primary anesthesia, but if there is no dilatation complete anesthesia is necessary. The vagina is wiped out with alcohol, the French hook is then placed on the anterior lip of the cervix and its handle steadied by a nurse. The base of the bag is then pulled out and the bag rolled up from one side to the other as tightly as possible, and grasped firmly by the curved broad ligament clamp. It seems almost unnecessary to add that the bag is boiled before it is inserted into the uterus. Two fingers of the left hand are then passed into the vagina to the posterior lip of the cervix.

With the right hand, the bag, held by the clamp, is passed in along the gloved left hand to the cervix and gently pushed through the os uteri. If resistance is met, the direction of the clamp is slightly changed to a place where there is less resistance.

The fingers in the vagina readily determine that the bulk of the bag is through the cervix. The clamp is then dropped by the right hand and steadied by the two fingers in the vagina. The metal syringe is now connected with the rubber tubing and the water is slowly forced into the bag. As the bag is distended the handles of the clamp are seen to separate and the clamp slips off the bag and is then removed. The bag is distended to its capacity. Before the fingers of the left hand are removed from the vagina the distended end of the bag is felt surrounded by the cervix. The tube is then tied with tape. To make sure that there is no leakage the tube is bent on itself and again tied with the bobbin. A small hole is made in the sterile pad and the tube is brought through it and the pad put in place. The patient is put back to bed and allowed to come out of ether.

If the bag is being used to induce labor gentle traction should be begun in about thirty minutes. From then on the tube should be pulled on with every contraction of the uterus, but if the contractions are of thirty minutes or more intervals, traction should be made in the interim every ten minutes. As the uterus begins to respond to this stimulus and contracts the traction becomes coincident with the contractions. If the traction is kept up while the uterus is contracting, not infrequently the pain caused is very severe and it is many times advisable to stop the traction after the uterus is contracting well.

In cases where the delay is due to the non-dilating of the cervix, and the pains are good, it is not always necessary to exert any traction on the tube. Traction undoubtedly hurries the dilatation, but if dilatation is hurried too rapidly the relaxation of the cervix is not complete.

To those physicians who never before have used the dilating bags the change that takes place in the cervix after a bag has been in the uterus two to four hours is truly astonish-

ing. From a rigid, tight, unyielding os to one which dilates merely by separating the fingers the change is astounding.

Unfortunately the bag does not always work as satisfactorily as suggested, but in by far the large majority of cases this description of its use is not an exaggeration. The danger of sepsis must be recognized, and it is because of this danger that I do not like to insert bags unless the vagina has previously been scrubbed out with alcohol and it is hardly fair to the patient to do that without ether.

In a very small number of cases the bag displaces the presenting part from the inlet so that a small part or cord prolapses. Unquestionably this is an objection to the use of the bag but it happens so infrequently that the good the bag does in the large majority of cases more than offsets the occasional complication which it produces. A physician who is not competent to deal with the complication should not place a bag in position. He should ask for a consultation, and place on the consultant the responsibility for the outcome of the case.

Intelligently used, the bag is a powerful help; carelessly used it causes damage and is therefore wrongly condemned.

SECTION XXIV.

RUPTURED UTERUS.

Case 73. INCOMPLETE RUPTURE OF THE UTERUS. Patient is seen shortly after eleven in the evening of July 8th in answer to a telephone message from my house officer saying he was unable to deliver the shoulders in a case on which he had just attempted to do a low forceps. When I arrived at the patient's house he had succeeded in delivering the baby and was trying to resuscitate it. I found the following conditions: — patient etherized, in the dorsal position across the bed. Patient's pulse was 120 and of fair quality. Uterus was well contracted and there was no external bleeding to note. Placenta was undelivered. While I scrubbed up for the delivery of the placenta the house officer gave me the following story: — It is the patient's tenth labor. No previous operative deliveries. At 8:30 the externe on the case had reported the patient to be in the second stage two and a half hours without progress. She was seen by the house officer at once and he found the patient having pains every three to five minutes lasting one minute. Uterus was not tender and was relaxing well. The baby was lying in a right position and was evidently very large. Fetal heart he found to be 152, a rise in rate from 130 in the past hour. Vaginal examination showed the head just within the vulva. Posterior lip of cervix not felt. Anterior lip found between the head and the symphysis. He advised operative delivery and it was accepted by the woman and her husband. Preparations were completed at once and the patient etherized. Position found to be O. D. A. Forceps readily applied, and the head delivered without difficulty. Traction followed on the head, but he was unable to start the anterior shoulder. After much traction without gain he telephoned to me for help. By the time I arrived he had succeeded in delivering the body. The baby breathed once or twice, but all attempts

to resuscitate it failed. In the light of the story of such a hard delivery, after delivery of the placenta I examined the patient by vagina. My right hand went up on the patient's right into a cavity which at first I took to be the relaxed uterus, and told the externe that he was not holding the uterus. He answered that he had his hand on the uterus in the patient's left side, and quickly showed by his manipulations that he was right. I then drew my hand out of this cavity the extent of which I did not attempt to determine. I then examined the patient's left lateral cul-de-sac. This was intact as was the anterior and posterior. A hand was then gently passed through the os and in going up it was at once seen that there was a severe tear on the right side of the os uteri which communicated directly with this cavity on the right. The left side of the uterus was intact. No intestines were palpated. The diagnosis of incomplete rupture of the uterus was made.

The surroundings were bad. I determined to bring the patient at once to the hospital for any further operative treatment that might be indicated. Several large clots of blood were removed from the broad ligament rent and there was also constant oozing of bright red blood. Because of this evident bleeding I packed lightly this cavity with sterile gauze, and then packed the uterine cavity. The patient was given ergot intramuscularly. She made a good recovery from ether, and her pulse when she was put back in bed was 132, of fair volume. The uterus was held firmly and pressure constantly applied over the packing on the right through the abdominal wall. The baby weighed eleven pounds and twelve ounces. As soon as the ambulance arrived the patient was taken to the hospital.

On arrival at the hospital the patient was found to be in good condition. Pulse 128 and of good quality. Careful examination of the abdomen showed the uterus to be well contracted at the level of the umbilicus, the smaller mass on the right had not increased in size from the time it was palpated at the patient's home. By percussion of the flanks no free fluid found. She was breathing easily and looked in good condition. There was no staining through of the

packing. I then determined to leave her alone. She was at once put in Fowler's position. No stimulation ordered.

July 9. Temperature this morning 100°, pulse 104. Patient apparently in excellent condition. Uterus tender. No tenderness in the left lower quadrant. Exquisite tenderness and muscular spasm in the right lower quadrant. She was let down from Fowler's position, and placed in the dorsal position across the bed with shoulders elevated. The packing was then slowly and gently removed without ether. I did not give her an intra-uterine douche as I was fearful of where the wash water might flow. The packing was entirely soaked through, but no apparent fresh bleeding followed the removal of the gauze. She was again put into Fowler's position with ice-bags over the lower abdomen. In the afternoon she voided urine involuntarily. Examination of the abdomen then showed a resilient tumor in the left lower abdomen, dull on percussion. She was catheterized and thirteen ounces of normal colored urine withdrawn. She was now ordered hexamethylenamine gr. v. t. i. d. Temperature tonight normal and pulse 96. Lochia normal in amount and character.

July 10. Temperature 98°, pulse 92. Uterus well contracted and less tender; tenderness marked on the right with slight muscular spasm. An enema this morning obtained a fair result. Lochia is strong, but not foul. Normal in amount.

At noon the patient complained of very severe sharp pain in the right lower quadrant. Examination showed that the spasm had greatly increased. The castor oil which she had in the morning gave several large results. Afternoon temperature 100.4°, pulse 94. The patient is taking soft solids well and is not vomiting.

July 11. Temperature and pulse the same. Tenderness and spasm on the right less. Uterus is involuting slowly and is not tender.

July 12. Temperature this morning 101°. Pulse 100. Breasts are filling and are quite uncomfortable. Supporting binder with ice-bags applied to both breasts. There is no material change in the abdominal condition.

July 14. This morning temperature 101°, pulse 92. Yesterday I put a bivalve speculum in the vagina to see the condition of the cervix and the tear in the broad ligament. The cervix is clean and red lochia is coming from it. From the tear is coming a small amount of dirty, dark, foul smelling discharge. Culture was taken from it and the report to-day received was "practically a pure culture of streptococcus." It is evident the cavity is draining and with a dropping pulse I decided to leave it severely alone in order to allow it to become well walled off from the abdominal cavity.

July 16. Definite resistance to palpation is readily felt in the right lower pelvis. Temperature this morning 103°. Pulse 100, but of poor quality. Patient this morning complains of a very severe headache and looks septic. The lochia was foul and much less in amount to-day. Bivalve was passed again into the vagina and it was seen that the opening of the tear had closed down in size a great deal. The patient was then given ether, and the finger passed into the cavity and the opening dilated carefully. At once much foul smelling greenish colored pus escaped. The cavity was then washed out carefully with a weak solution of chlorinated soda. Care was taken to keep the top of the douche can but a foot above the level of the bed so that there could be no force to the stream. Sterile gauze wick soaked in alcohol then packed gently into the cavity.

January 17. Temperature at 9 A.M. was 104.2°, pulse 106. Patient vomited this morning once. Abdomen is not distended and the tenderness over the right side is much diminished. Uterus is not tender and is involuting slowly. Profuse foul discharge present all day yesterday and last night. Wick removed to-day. No backing up of pus. Cavity washed out as before. Bowels are freely open.

July 18. Temperature this morning 102.2°, pulse 96. She looks much brighter. Has not vomited since yesterday, and has taken her nourishment of soft solids well. Cavity again washed out and much pus came away in the wash water. The tenderness on the right is much less and the induration less marked. Ice-bag now omitted.

July 19. Temperature is steadily dropping. Pulse is slowly coming down and is of much better character. Lochia now is much less foul but is profuse and of a whitish color. Cavity is washed out now twice a day. It is rapidly shutting down.

July 23. Patient three days ago was let down from Fowler's position. To-day she sat up in bed with a head rest. Temperature is normal and pulse 80. She is eating the regular house diet, and is gaining rapidly.

July 29. Patient is now up and about the ward. By abdominal palpation there is no tenderness or induration present. Irrigations of the cavity stopped as it now has almost completely closed. Hot vaginal douches of sterile water twice a day now begun.

August 1. Vaginal examination shows the uterus well involuted, normal position, but not freely movable. Appreciable thickening where the tear was, but no tenderness. Definite scar is felt running off from the cervix to the right pelvis. Cervix has a deep bilateral tear present. Sinus is closed. Patient is discharged.

Summary of Ruptured Uterus.

Text books generally state that a rupture of the uterus is an uncommon accident in obstetrics. That it is a commonly recognized accident is rare, that it is an admitted accident is very rare. If autopsies followed in all deaths that occurred in obstetrics, especially in those cases where difficult operative work has been done, the primary cause of death I am confident would be found to be a rupture of the uterus much oftener than it is recorded.

Two types of rupture of the uterus are recognized. First, the complete, in which the tear extends through the muscular layer and peritoneal coat and the peritoneal cavity is opened. Second, the incomplete in which the peritoneal coat of the uterus remains intact. Case 72 is a good example of this latter type. The usual primary cause for the rupture is an unrecognized disproportion between the fetus and the pelvis. Operative deliveries in neglected cases, forcible dilatation in placenta prævia or in eclampsia may be

frequent causes of rupture. Careless, ill timed, and badly fashioned operating by poorly trained physicians cause many ruptured uteri and the true condition is covered up by the terms post-partum hemorrhage and pulmonary embolus.

The immediate cause of the rupture in this case was the excessive size of the child. What the condition of the vaults of the vagina were in this patient as the result of previous deliveries was unknown. There may have been well-marked cicatrices present and when the operator accomplished the delivery of the shoulders the cicatrix ruptured. When scar tissue starts to tear no one can tell where it will stop. That scar tissue may be present in the vaginal vaults, even when no operative delivery has occurred, all physicians who have had experience in gynecological clinics recognize. Scar tissue many times will soften and dilate, but its action always is problematical, and a source of worry. Should this patient ever again become pregnant, a Cæsarean section would without doubt be the conservative method of delivery.

The signs of a threatening rupture of the uterus are sufficiently well marked for any physician of average intelligence to appreciate. The contractions of the uterus become constant. There is no relaxation, the uterus is in a state of tetanic contraction. Palpation of the uterus causes exquisite pain. Not infrequently the moment the hands are placed on the uterus the patient will at once try to lift them off. The contraction ring may be palpated, even seen. The higher this ring is found the greater the danger of rupture occurring. The patient's pulse is accelerated and the temperature is often elevated. These signs may not all be present, but when they are, and the more marked they are, the more imminent is the rupture.

When spontaneous complete rupture takes place the patient is seized with a sudden, sharp, intense pain; then follows at once a quiescent stage. The uterus stops contracting, the patient goes at once into more or less profound shock. The pulse if rapid before, becomes more rapid, of poor volume and tension. The signs of hemorrhage then rapidly follow, the hemorrhage may be either internal or external or combined. The change in the contour of the

uterine tumor depends upon how completely the fetus escapes into the abdominal cavity. The history of previous tumultuous labor, its sudden cessation accompanied by shock make the diagnosis of rupture of the uterus not difficult. In the treatment of this condition prevention is most important. Prevention means careful intelligent oversight of the patient during the pregnancy as well as during the labor.

A patient who has had one Cæsarean section if she is allowed to go into active labor at a future pregnancy may rupture her uterus at the scar, and for that reason she must be very carefully watched for signs of threatening rupture. Once a patient has had a Cæsarean section the conservative procedure is the repetition of that operation. We all have seen Cæsarean patients deliver themselves without disaster in a subsequent labor. Because one patient has done this is no argument that all patients who have had Cæsarean sections should be allowed to go into labor.

I have already said that poor operative work is a frequent cause of rupture, and in order to prevent this the entire standard of obstetric work throughout the country must be raised and physicians must realize that they must not operate unless they have received adequate training.

The treatment of a ruptured uterus varies according to whether the rupture is incomplete or complete, whether there is active hemorrhage or whether there is no hemorrhage. In cases where the rupture is complete and the baby undelivered, laparotomy unquestionably must be done. The fetus is practically always in the abdominal cavity and no attempt should be made to deliver it through the rent by vagina. The fetus and placenta removed through the abdominal incision, the question then of repair of the rupture or of hysterectomy comes up. If sepsis is absent and the rent is where it may be successfully closed, this may be done but the probability of sepsis is so great that in all but the rare case hysterectomy is the operation of election.

In an incomplete rupture the decision for performing a laparotomy is determined by the presence of hemorrhage and the patient's condition. The recorded case is a good ex-

ample of the management of an incomplete rupture of the uterus. If the patient survives the first shock the danger is sepsis. Sepsis was here present, but was not virulent, and the patient gradually overcame it and left the hospital in excellent condition.

SECTION XXV.

HYDRAMNIOS.

Case 74. ACUTE HYDRAMNIOS. Patient presents herself at the office on November 20th, having been referred by her family physician. She says her last menstruation, which was normal in all respects, began on May 22. She, therefore, will be due for delivery about the first of next March. She is thirty-one years old, and has never been ill.

The present pregnancy is her third, the first two pregnancies terminating in normal easy deliveries and the children weighed nine pounds, and nine pounds twelve ounces. The last baby was born fifteen months ago. After the last baby she developed on the eighteenth day an inflammation of the left breast and six days later an abscess was opened. In the course of a month she says the incision healed.

Her present pregnancy is not remarkable. She apparently is in excellent condition. Palpation of the abdomen to-day shows the uterus to be at the level of the umbilicus. Definite fetal motion is felt on the patient's right. Left breast shows an inch incision in the outer lower quadrant. Blood pressure 112 mm. of Hg. Specimen of urine passed in the office was clear, of normal color, acid in reaction, specific gravity 1.020. No albumin or sugar present. I went over with her carefully the care that she should take of herself during this pregnancy.

December 5. She reports to-day at the office saying that three days ago she waked up with a terrible headache over her forehead, but that gradually during the morning it grew better. Trying to explain to herself the reason for this headache she says she began to realize that she was drinking but one or two glasses of fluid during the day, and that her bowels had not moved for two days previous to the beginning of the headache. She at once took an enema and obtained a good result. She then began to drink water freely.

Since her bowels moved well and she began drinking six to eight glasses of water each day, there has been no return of the headache. Blood pressure to-day was 118. Urine which she brought to the office from the twenty-four hour amount, which was a little over three pints, was of normal analysis.

January 2. Is in excellent condition in every respect. Blood pressure 118.

January 11. Comes in to the office to-day saying she has had more or less headache for the past two days, and she noticed that the urine was darker in color than it previously had been. She is again very constipated, her bowels not having moved for two days. Last night she had a "severe burning sensation in the pit of her stomach." She has had no flashes before her eyes. Her blood pressure is 118. She has no edema of face or hands. Analysis of urine brought in was: — Color high. Specific gravity 1.028. Albumin very slight trace. Sugar absent. Sediment showed a very rare hyaline cast, few small round cells, occasional leucocyte and much vaginal detritus.

She was sent home. Told to take a hot bath and at once to go to bed and to cover herself up with blankets. She is to take a teaspoonful of Epsom salts every half hour for four doses. I limited her diet to milk only and water.

Her husband telephoned to-night that his wife had no headache, was sweating profusely and that her bowels had moved freely three times.

January 12. Saw her to-day at her own home. She has no headache, and wants very much to get up. Bowels have moved twice this morning. Her skin is moist. Palpation shows fundus a little more than half way between the umbilicus and the ensiform. Fetal motion felt and seen on the right. A question if the baby is not presenting at the present time by the breech. Blood pressure is 108. Examination of the urine shows no albumin to be present by the nitric acid test. (Nitric acid was carried out to her home that the urine might be tested at once.) Toast and cereals are added to her diet.. She was asked to take two teaspoonfuls of Epsom salts each morning. A hot bath was ordered each

night. If she continues to feel as well to-morrow as to-day she is to get up, but is to stay on one floor.

January 14. Urine: — Amount just under three pints. Color high. Reaction acid. Specific gravity 1.020. Albumin very slight trace. Sediment as above recorded. She has no untoward symptoms.

January 17. Telephones to-day that except for a slight pain in her right side at her ribs she is very comfortable. She now is on a soft solid diet. Bowels are moving well, and the urine varies in amount from three to four pints, examination of which shows no difference from that previously noted.

January 18. Telephones late this morning that she had difficulty late yesterday afternoon in passing her water, but after taking a hot bath she voided without difficulty. She is complaining of difficulty in breathing, that the slightest exertion makes her breathe rapidly, and that the pain in her right side is distinctly worse.

I saw her in the afternoon. She looks drawn and pinched, with dark rings under her eyes. Color which she had at the last visit is gone. She is in bed propped up on three pillows. She complains of the pain, more or less constant in her right side and difficulty in breathing. Her difficulty in breathing she attributes to her size from the pregnancy. She has no headache. Her temperature is 98.4°, pulse 112, respirations 28. Blood pressure is 120.

PHYSICAL EXAMINATION: — Heart sounds normal. Examination of both lungs normal front and back. Abdomen is globular and the skin is shiny with minute dilated blood vessels present throughout the entire abdomen. Abdomen is tense and there is no pitting on pressure. No fetus is palpated. No fetal motion felt. No fetal heart heard. Entire abdomen except on the right and left flank and across the epigastrium is dull on percussion. Fluid wave is readily obtained. There is no edema of the vulva. Slight edema of the ankles and of the legs half way up to the patella. Measurement of the abdomen at the umbilicus is forty-three inches.

Diagnosis of acute hydramnios is evident. I advised her

to come in town to a hospital at once where she could be properly looked after. Both she and her husband readily accepted the advice.

January 19. Last night after she was made comfortable in the hospital she slept she says better than for a week past. Pulse this morning 76, temperature normal, respirations 24. She has had no contractions. This morning I had to go to another patient some distance out of town and while absent she started having pains every two minutes. Another physician, whom I had left in charge, was called but in the course of an hour all pains ceased, and he determined to await my return. I saw her in the early evening, and as there were no signs of labor I decided to wait a few hours more hoping the uterus would start to contract before rupturing the membranes.

January 20. No sign of labor to-day. She is very comfortable, and as her pulse was still 76 and her general condition much better than on entrance to the hospital I decided to wait until contractions began or at least another twenty-four hours.

11:45 P.M. Telephone message from the hospital that the patient had just begun having pains, and for the last twenty minutes had had them every five minutes. She was having no show the nurse said but the pains hurt her a great deal. I went at once to the hospital and found the patient having pains every five minutes, lasting from one-half to three-quarters of a minute. Pulse had risen to 90. During a pain the pulse rose to 100. Uterus was contracting well. Relaxed somewhat between pains, but because of the amount of distension that was present complete relaxation was impossible.

Now that the uterus was contracting I determined to rupture the membranes with the aid of a catheter and a stylet in order to let out some of the liquor, and then to put in a large-sized Voorhees dilating bag to make certain that the uterus would not stop contracting when the liquor was drained off. She was etherized and then prepared in the usual manner. The perineum was dilated very quickly and without any difficulty. The anterior lip of the cervix seized with a double hook and steadied by a nurse. Left hand

passed into the vagina and a web catheter with the stylet in it was pushed in through the external os, which was dilated two fingers, into the uterus. The stylet was so bent that when it was withdrawn a little way the end protruded from the eye in the catheter. The catheter was then rotated slightly so that the stylet punctured the membranes. The scheme worked satisfactorily and liquor immediately came out. I withdrew the stylet entirely. The catheter must have gone into the amniotic cavity for the only liquor that came out was through the catheter. The amniotic sac was slowly emptied and the contractions still continued. Palpation by my assistant showed that even with the amount I had let out there still was considerable waters present in the uterus. The uterus now relaxed satisfactorily and when a pain came contracted well. After I had let out possibly three or four quarts of fluid I withdrew the catheter and put in the large bag and immediately distended it with water. A sterile pad was put over the vulva and the patient put back to bed. She immediately came out of ether. Pains continued coming in decreasing intervals of five, three or two minute lasting from one-half to one and a half minutes. The uterus relaxed well between pains. The bag was put in at one A.M. January 21st. At each pain the nurse pulled gently on the bag.

At half past five the bag was found to have come through the cervix and a few minutes later it came out over the perineum. I at once decided to etherize and deliver her for her pulse had risen to 120; the uterus was not relaxing as well as earlier, and the lower uterine segment was slightly tender. Patient was again etherized and prepared. Four ounces of high-colored urine withdrawn by catheter. Examination of the cervix showed that it was fully dilatable and thin. Examination of the presenting part gave a soft mass. It is difficult to feel any bones. Question what the presentation was at this first examination. On pushing the hand further into the uterus the definite irregularities of the face were felt on the patient's right. The entire head felt edematous. The position was made out to be occiput left anterior and the forceps were then applied. Traction brought down the

head at once to the perineum and the head then held. Without traction-rods I could not sink the occiput beneath the symphysis. Traction-rods were then used and after much traction the head was gradually brought low enough to be delivered with much difficulty. Just as the head was crowning it was seen that there was an area of maceration at the occiput. The soft feeling of the head was due to the edema which was present. The head delivered, traction downward on the neck gained absolutely nothing. Then with steady traction downward on the neck and with the blunt hook in the anterior axilla I drew down the anterior shoulder and was able to deliver it from beneath the symphysis. The blunt hook was then put into the posterior axilla and with traction first downwards and then slightly upwards the posterior shoulder was delivered. Head and shoulders delivered, there was as much difficulty in delivering the body as there had been with the shoulders because of the great amount of edema that the baby presented. After much traction the body was delivered. It was then seen that the arms, legs and abdominal wall pitted very readily when pressed upon. The abdomen was distended to about twice the size of a normal full-term baby and there were marked areas of maceration over the abdomen and other areas of maceration over the back. The whole body presented a condition of general anasarca. The cord was small, not edematous. No knots present in it. It was clamped and cut, and the baby was put aside. Examination of the perineum showed that no fresh tear of the perineum was present. Part of the placenta was protruding from the vagina. The uterus continued to contract well. There was no bleeding. Maternal pulse at this time 148. Coincident with the third contraction the placenta came away. It was very large, nearly twice the normal size and very edematous, and friable. Membranes came away intact. As far as could be determined the placenta was also intact. Ergot was given intramuscularly. Because of the hard delivery and the number of times that the hand was thrust into the vagina I gave an intra-uterine douche of salt solution followed by 70% alcohol. Examination of the cervix showed a slight right-

sided tear and on the left a deeper laceration, but there was no bleeding. The uterus was intact. The patient was put back to bed in fair condition. Uterus was held constantly for an hour. It stayed well contracted. Gradually the pulse came down and her condition steadily improved. At eight o'clock her pulse was 100. The baby was a boy and weighed eight pounds and five ounces and was about five weeks premature.

January 22. Temperature normal. Pulse 80. Uterus hard. Well contracted. Not tender. Lochia normal in amount and character. Anus very edematous and tender. She is taking her food well and there are no untoward symptoms. She is beginning to be slightly distended. Late this afternoon she was given three-quarters of an ounce of castor oil, and two hours later given an enema, and an excellent result was obtained.

January 23. Slept well last night. No distension present. For the edema about the anus pads of absorbent cotton soaked in equal parts of hamamelis and water have been applied every two hours. Lochia is normal in amount and character. Uterus is involuting well and is hard and well contracted. Temperature is 98.8° and pulse 80 to-night.

January 25. Breasts began filling up to-day and the patient is quite uncomfortable. Temperature at nine is 99° and pulse 90. Left breast in which she had an abscess her last pregnancy is much more tender than the right. Ice on both breasts and a light supporting binder. Is in excellent condition.

February 4. Has done well. Lochia now very slight. Absolutely no tenderness anywhere in the pelvis. Breasts which were uncomfortable for twenty-four hours after the last note have been left absolutely alone. She is doing her exercises regularly morning and night, she is very anxious to go home.

February 5. For family reasons she is going home to-morrow. Vaginal examination to-day shows practically no discharge. The old tear of the perineum is evident. No bulging of the anterior or posterior wall. Uterus is in normal position and within normal limits of size. Nothing felt on

the sides. Speculum shows slight bilateral tear of the cervix. More marked on her left.

March 20. Patient reports to-day at the office. She is in excellent condition. Vaginal examination reveals nothing abnormal. Pathological examination of the fetus and the placenta gave no cause for the condition found.

Summary of the Management of Cases Presenting Hydramnios.

The above case brings up the management of a patient who develops hydramnios, acute or chronic, in the course of her pregnancy. The management of either condition is essentially the same.

Hydramnios is not of itself a disease, but a sign of a condition which may have different underlying causes. There is no one condition which can be said to be the cause of hydramnios. On the part of the mother syphilis, cardiac and renal disease are given as possible causes. Whether syphilis is the direct cause or because of its effect on the fetus is not definitely known. On the part of the fetus, malformations, abnormalities of the placenta or membranes and multiple pregnancies are supposed causes. What is cause and what is effect, however, is not known. No one explanation is as yet satisfactory for all cases and in many cases no satisfactory answer can be given. In this case no explanation of the condition was found, for examination of the fetus and placenta showed no pathological condition, except the edema and the mother had no demonstrable disease. Syphilis has not been ruled out as yet by the Wasserman reaction and before this patient becomes pregnant again it must be.

The symptoms arising from both acute and chronic hydramnios are practically all due to pressure on the various organs. In an acute case the body bears this sudden increased pressure poorly with the result that the discomfort to the patient may be very great. The above recorded case is an excellent example of the acute type of this condition, and to those who have never seen it, the acuteness of the

onset is almost unbelievable. In the chronic form where the accumulation of the amniotic fluid is relatively slow the various organs adjust themselves to this increased pressure and the discomfort, though marked, is seldom so great as in the acute form.

The diagnosis of this condition is very easy provided the diagnosis of pregnancy is well established before this complication arises. In the above case the pregnancy was known to exist and with the physical examination as recorded on January 18th no other diagnosis than that of acute hydramnios was possible. Had a vaginal examination been made at this time ballotment in all probability would have been obtained, but in this individual case vaginal examination was not indicated. It was contra-indicated because at that time, at her home there were no preparations for delivery, and one vaginal examination might have ruptured the membranes. If the diagnosis of pregnancy had not previously been established, a vaginal examination should have been made. Once the diagnosis of pregnancy established there is practically no other condition with which hydramnios may be confounded.

In cases where the diagnosis of pregnancy has not been established the diagnosis of hydramnios may be very difficult. As happened in this case, no fetal parts were felt and no fetal heart was heard and when those two important signs of pregnancy are absent, the diagnosis of hydramnios becomes difficult. Hydramnios is often associated with multiple pregnancy and usually is not of marked degree.

The treatment of hydramnios depends upon the grade that is present. If slight, no special treatment is necessary except that care must be taken when the membranes rupture to be sure that the cord does not prolapse.

In acute hydramnios delivery is necessary on account of the pressure symptoms which arise. In a very large percentage of cases where marked degrees of hydramnios are present malformations of one kind or another appear in the fetus. Because of this fact the life of the child is of secondary consideration (unless the patient is a Catholic) and the welfare of the mother alone need be considered.

If the membranes rupture low down with a sudden escape of the amniotic fluid, prolapse of the cord or small parts with resulting malpositions of the fetus may follow, but the mother must not be subjected to the added risk of a forced, hard operative delivery for the sake of a baby which in all probability is abnormal.

The danger to the mother in this sudden emptying of the uterus of the amniotic fluid is the separation of the placenta and its resultant hemorrhage.

High rupture of the membranes with gradual draining off of the fluid is the best way to treat cases of hydramnios of severe grades. After the waters are drained off, labor may start up at once or, as is more apt to be the case, many hours may elapse. This is especially so when the distension is great. To obviate this delay a dilating bag may be introduced into the uterus. This was done in this case and labor progressed steadily.

Given a case of moderate degree of hydramnios there is necessarily no indication to interfere with the pregnancy or labor unless the signs of pressure become severe. When labor starts it may be inefficient because of the over-distention of the uterus. If the labor is unsatisfactory, high rupture of the membranes should be done. Labor will then probably progress to a satisfactory termination. The means to meet a post-partum hemorrhage must be at hand. In cases of acute hydramnios the sooner the uterus is emptied the better. The question may be raised why the above patient was allowed to wait forty-eight hours after the diagnosis was made before interference was begun. My plan was to watch her a few hours closely and on the first sign of contractions of the uterus to rupture the membranes, feeling that if contractions were present the danger of serious post-partum hemorrhage would be much lessened. Had I been present on the 19th of January when contractions began, unquestionably I would have ruptured the membranes. On my return the patient was resting quietly and in excellent condition and I therefore determined to wait. Had this patient not been under hospital supervision, that is, had she refused to come to the hospital and insisted upon staying in

her home, she should have had labor induced at once for the danger of uncontrollable post-partum hemorrhage I believe would have been less than the danger which sudden rupture of the membranes entailed, without competent medical care at hand. The outcome of this case is an argument in favor of the judgment used. This case points out a further lesson that in each and every obstetric case individual study is necessary and a mode of procedure should be mapped out which in all probability will give a successful result.

SECTION XXVI.

CICATRIX IN THE VAGINA COMPLICATING LABOR.

Case 75. MULTIPAROUS LABOR. CICATRIX IN THE VAGINA. MANUAL DILATATION. HIGH FORCEPS. Patient is seen for the first time September 15th. She is a Jewess in labor at term in her fourth pregnancy. Her first baby was delivered normally after a long labor, but the baby was stillborn. The second also was a long labor, without operation, and the baby was stillborn. The third baby is living. All these babies were born in Russia, and no intelligent history of what happened there is obtainable.

Labor is said to have begun at 11 P.M. September 14th. The membranes ruptured at 2 P.M. September 13th. I saw her at 1 P.M. September 15th, because of lack of progress in a multipara and because of incomplete dilatation. Palpation showed a large, fat woman in active labor. Pains were coming every two minutes and lasting one and a half minutes. Uterus was not tender. Vaginal examination revealed a cicatricial band in the vagina completely surrounding the vault which admitted two fingers, and an inch beyond was felt the cervix, the amount of dilatation of the cervix was not determined. The head was not engaged. Fetal heart was 160, heard in the left lower quadrant. Patient's pulse 112 and her temperature 101°. I advised that she be sent at once into the hospital for delivery. After some delay this advice was accepted by the family and she arrived at the hospital at quarter past two. She was immediately prepared for operation. She was etherized, placed in lithotomy position, catheterized and the vagina dilated. It was then seen that the band had thinned out to a superficial band of tissue which ruptured on dilating. Beyond this ruptured band the cervix was found two-thirds dilated. Dilatation of the cervix was completed manually. Position of the baby

found to be O. L. A. and forceps were applied. Forceps readily locked and the head was brought down with an traction to the perineum, and then readily delivered. There was no fresh tear of the perineum. Baby was readily resuscitated. Placenta was expressed without bleeding, and ergot was given intramuscularly. The tear of the vagina from dilating required no repair as it involved only the mucous membrane. Patient made a normal convalescence and nursed the baby. On September 28th vaginal examination showed a deep bilateral cervical tear. Uterus had involuted normally and was in normal position. The cicatricial band had so contracted at this time that it admitted but two fingers. The patient was discharged well as was the baby and she was warned if she ever became pregnant again to place herself under the charge of the hospital so that the progress of her pregnancy could be watched.

Nineteen months later my house officer reported to me at five one afternoon the following facts:

That he had seen at eleven P.M. the night before a multipara who had been in labor twenty-four hours; that she was in good condition, uterus soft and not tender, and that he had watched her for nearly an hour during which time she had had no contractions; that he then gave her a quarter of a grain of morphia in the hope that she would obtain sleep and then start up in good labor; that this morning the externe reported that she was in labor, and pains were coming every five minutes; that at three-thirty P.M. he had seen her again and found the following conditions: Large, pendulous abdomen, position of fetus O. L. A. No fetal heart heard. Uterus relaxing poorly between pains and slightly tender. Patient's pulse 120. Vaginal examination gave a mass of scar tissue in the vaults, os uteri dilated one finger, biparietal not through the brim.

I saw her at once and confirmed his findings. Vaginal examination by me showed the vault was a mass of scar tissue with several radiating bands easily palpated. Os uteri admits one finger and a soft mass is felt beyond, which is, in all probability, a caput succedaneum. At this time I remarked to the house officer that this condition was very

much like one I had operated on some months before when labor had been delayed by a cicatrix in the vagina. Her temperature was taken while I was there, and found to be 100°. I advised her removal at once to the hospital for delivery, and she accepted my advice.

As soon as she entered the hospital she was prepared for operative delivery. She was etherized and placed in lithotomy position. The usual preparations were carried out. Vaginal examination showed the os uteri dilated one finger. Gradually the cervix was divulsed. It was accomplished slowly and without undue laceration. Dilatation completed, and as the position of the fetus was being verified a moderately tight contraction ring was felt and also a pulseless loop of cord palpated beside the head. Forceps readily applied to a high O. L. A. and with slow, careful traction the head gradually descended, and was delivered without difficulty. The baby was dead, and over an area of about the diameter of an inch, just at the umbilicus, the skin was slightly macerated. Placenta later came away intact with all the membranes. There was no excessive bleeding. French hooks placed on the anterior and posterior lips of the cervix and the cervix was drawn down. The tears in the cervix were irregular, but not excessively deep and as there was no bleeding no attempt to repair the cervix was made. An internal tear of the perineum was repaired at once with two chromic catgut sutures. A hot intra-uterine douche of salt solution was given, and it came back clear. This was followed by one pint of 70% alcohol. Patient was put back to bed with a pulse of 130, but of good volume. Uterus acted well and there was no bleeding. Gradually her pulse dropped in rate.

She made an uneventful convalescence. Her breasts gave her no discomfort, and dried up very quickly. She got out of bed on the twelfth day. On the next day vaginal examination gave the following result: — General bulging of the anterior and posterior vaginal wall. Old lacerations of the perineum. There is a tear on the left vaginal wall reaching to the vault. On the right there is a cicatricial band running from the cervix across the vault. The cervix has a

stellate tear. The vault is so contracted that it admits but two fingers. The uterus is in normal position, fairly well involuted, not freely movable. There is no flowing present.

Two days later she was discharged from the hospital.

Investigation showed that these two cases were succeeding pregnancies in the same woman. Several interesting problems are brought up by these pregnancies. The patient was unintelligent, and a satisfactory history of her previous labors was not obtained, but it is fairly certain that no instruments were used in the delivery of the three previous children. Many surmises as to the cause of the vaginal cicatrix are possible. The important point here was that we had a multipara in good labor who did not make progress. The reason for lack of progress must always be determined. This necessity was appreciated the first time we had charge of this patient, but the second time the house officer misinterpreted his findings. He for some reason disregarded the history of the patient's twenty-four hours of labor, and gave her morphia so she might obtain sleep. When he examined her thirty-six hours, at least, after labor began, he found the cause of the delay — namely the scar tissue, and then at once reported his findings to me.

The history of previous operative deliveries is always important, and must be obtained. Had this house officer obtained this history and the fact that the patient was the same as the one we previously had looked after, in all probability, the baby in the last pregnancy would not have died. With an unintelligent patient it is not sufficient to warn her as we did the first time, to come to the hospital early, that she may obtain the best of treatment. Such patients must be followed up, and the most satisfactory way yet found is to have a pregnancy clinic to which all patients must come at regular stated times if they wish to be attended at labor.

This patient has again been looked after by the hospital. This last time she came to the pregnancy clinic as requested with the result that she was operated on early and a live baby obtained.

The question how to deliver these patients with extensive cicatrices in the cervix and vaults of the vagina is many times troublesome. (Page 452.) If the scar tissue will relax and stretch, then the problem solves itself, but if it does not then a vaginal Cæsarean section or a manual or instrumental dilatation must be done. A vaginal Cæsarean with a large full-term baby is a very difficult operation. If much scar tissue is present it is dangerous. A manual dilatation in such cases is no dilatation at all; it is purely a divulsion, and in careless hands is also very dangerous. Even in careful hands the outcome is always problematical. In such cases the risk to the mother is less, if an elective Cæsarean section is done. Patients will not usually submit to a Cæsarean section, for they do not appreciate the danger they face from a hard operative delivery by vagina.

SECTION XXVII.

PNEUMONIA COMPLICATING PREGNANCY.

Case 76. PNEUMONIA COMPLICATING PREGNANCY. January 25. Telephone message from a physician to-night saying he wished me to see a patient at once with him who had a temperature of 103°; pulse 130, with the question of inducing labor.

I met the physician at the patient's house within an hour, and he gave me the following history: — The patient is within three weeks of term of her second pregnancy. One week ago she took an automobile ride, and when she got home she was chilled. She had no definite chill. The next day she began to cough slightly and to complain of pain in the right side of her chest on breathing. The temperature has not been taken regularly, and what it was the first four days of her sickness the physician did not know. She did not go to bed until four days ago. Three days ago her temperature in the morning was 101.5°, pulse 130. The physical examination was negative. Three nights ago she began having uterine contractions accompanied by pain. These contractions aggravated the pain she had in her side, and she was in so much distress that the physician gave her a quarter grain morphia suppository. From this she slept fairly well during the night.

Two nights ago the pain was so severe, he said, from the contractions of the uterus that she was given ether at intervals during the entire night. During the day she has been fairly comfortable except for the pain in the right chest. She has also had several coughing spells, for which she was given morphia. (There has been no accurate record of the amount of morphia given.)

Last night she again was very uncomfortable from the contractions and from the pains in the chest, and she was again given morphia by mouth and by suppositories.

Her temperature this afternoon, the physician said, was 103°, pulse 130. He became anxious about her condition and asked me to see her, saying he thought she should be delivered at once.

When I first saw her she was lying in bed raised on several pillows, on her right side. Her face is flushed. She does not look seriously sick. The rapidity of her respirations was noticed at once. Her alæ nasi were moving rapidly. Her pupils were much contracted. She answered a few of my questions, and then had a distressing coughing spell and raised some thick, tenacious, rusty colored sputum. I did not persist in obtaining any further history from her, but at once examined her abdomen.

PALPATION OF THE ABDOMEN: — Large-sized baby lying in a left position. Head is freely movable at the brim. Fetal motion is marked. There is no tenderness present in the abdomen. While palpating the abdomen the *uterus* contracted twice, but the patient had no pain. No tenderness over either kidney region. Fetal heart is 120 to the minute in the left lower quadrant.

VAGINAL EXAMINATION: — Introitus very blue and relaxed. Feels like a slight bilateral tear of the cervix. The cervix is not taken up; admits to the internal os, two fingers. Presenting part is free at the brim.

The patient is in a profuse perspiration and I asked that her temperature be taken again. It was found to be 98°. Her pulse was 130, full and bounding.

I told the attending physician that I could see no reason from an obstetrical point of view for inducing labor. That her condition was not, in my opinion, due to the pregnancy; that there must be something outside the uterus causing this temperature and pulse. I then asked him if he was sure there was nothing in the chest to account for *this rapid* respiration, which I made to be thirty-eight to the minute. He now asked me to listen to the chest, which I did, with the following result:

Heart is not enlarged. Sounds are clear and loud. Percussion of the chest anteriorly is normal; respirations are clear. Expiration is slightly prolonged. She was turned

now on her left side, and the right chest posteriorly listened to quickly. Here at the base is typical bronchial breathing, breath sounds and whispered voice sounds markedly increased. Percussion of the right base gives dulness. I did not go over her lungs carefully and completely, for her pulse was not now of such good quality.

Diagnosis: Lobar pneumonia complicating pregnancy.

I told the physician-in-charge that there is no question but she has a pneumonia, and that she probably is in the midst of her crisis. I suggested calling an internist, but he would not listen to it, and asked what I was going to tell the husband. I said I should tell him that she probably would be much better in the morning, and would go on to the end of her pregnancy with no further difficulty. I advised the physician to tell the husband that his wife was at the crisis of a pneumonia. This he absolutely refused to do, and as the husband asked me no questions I volunteered no information.

I advised the physician to stimulate the patient as the indications arose; to stop the morphia entirely, and if it was necessary to stop any excessive cough to use codeia. To open her bowels thoroughly and to give her more fluids to drink.

I telephoned the physician a week later and he said that the patient gradually improved. Since I saw her she had had no further rise of temperature, and her pulse gradually came down to normal. She still, however, was coughing a great deal.

The final outcome of this case was that she was delivered on February 10th after an easy labor. She made a fair convalescence, but her cough persisted for sometime.

This case brings up the management of medical complications during pregnancy. In earlier cases the management of cardiac cases has been touched upon. These are usually of a chronic type. The present case differs in that a pneumonia is acute and of short duration. In these complications the fundamental treatment must be directed

at the complication and not at the pregnancy. Emptying the uterus would not have helped this patient in the slightest, but on the contrary might have killed her. In general it is fair to say that if the pregnancy is not the cause of the complication there is no reason to interrupt it. Pregnancy may aggravate the symptoms, but if the patient is so dangerously sick that it is suggested to empty the uterus one must remember that the added strain of the operation may turn the scales against her. In the presence of an active tuberculosis the uterus should be emptied, but only after a consultation. Again it should be emptied when a chronic nephritis is evident.

If in the presence of surgical complications operation is necessary for the life of the woman it is to be undertaken, but if palliation will carry the patient along until after the delivery, it is to be attempted. Operations for acute inflammatory processes within the abdomen in the pregnant woman, carry with them a very high mortality, and should be postponed if possible.

SECTION XXVIII

THE BABY.

I have already gone over the list of articles necessary for the mother to have for herself in the house ready for the delivery; the list for the baby is now given:

Olive oil.
Soft wash cloths.
Soft linen towels.
Castile soap.
Bath thermometer.
Talcum powder.
Sleeping basket.
Scales.
Bath tub.
Diapers, 3 doz., 22 by 44 inches.
Diapers, 3 doz., 25 by 50 inches.
Slips — nainsook or fine linen, at least six.
Nightdresses — flannel, at least three.
Shirts — No. 2, silk or silk and wool, at least three.
Bands — knit — silk or silk and wool, at least three.
Square flannel shawls that can be washed.
Flannel one yard, untorn; for bands.
Medicine dropper.
Small clothes horse.

This list needs no explanation. Whether all the articles are obtained or not depends entirely upon how much money the family has to spend on the outfit. This list can be cut down but little, it can, however, be added to in many ways.

A study of the various cases shows the history and treatment of some of the problems that appear in the management of the baby. It does not seem best to give an entire new case for the sake of showing clearly the treatment of the baby, and therefore, I shall include in this section the more important points which constantly come up to the obstetrician in dealing with the newborn baby.

Throughout the previous cases I have constantly shown the importance of listening to and recording the fetal heart. Too much emphasis cannot be put on this, for it is the only way we have of following intelligently the baby's condition.

Many babies have been lost because of failure to watch the heart regularly.

I have already shown the points to be kept in mind during the birth, namely, to free the mouth from mucus, to feel for the cord, and to wipe out the eyes, and as soon as the baby is born, to drain it thoroughly. Page 116.

Whether the baby cries at once or not depends upon the degree of asphyxia that is present. Two degrees of asphyxia are recognized; the mild, when the baby is blue and cyanotic; the muscles have tone and are more or less rigid; and the severe, when the baby is pale and limp, without tone and looks to all intents dead. The first is called livid asphyxia, and the second pallid asphyxia. In the first the baby's heart beat is strong, and the rate rapid, while in the second the heart beat is very slow and scarcely perceptible.

The first type rarely needs any treatment. The stimulus of the air on the skin will always make such a baby breathe, and it soon will show the normal pink hue of a healthy newborn babe. If it should not breathe as quickly as one wishes gentle slapping of the buttocks or blowing on its chest will at once start respiration.

A baby born in pallid asphyxia needs the most careful and the gentlest handling in order to bring it through the first great crisis. A baby in pallid asphyxia is in a very precarious condition, and because it is in this condition I have always felt that anything but the most gentle handling is contra-indicated. The baby, of course, is drained thoroughly, and then it is put in hot water and kept there. The water should be at a temperature that the hand can be held in comfortably. Warmth is essential in the treatment of this condition. Artificial respiration is then begun slowly and deliberately, about eighteen times a minute. If respiration does not at once begin, then mouth to mouth insufflation may be tried. How efficient this means is I have never yet been able to satisfy myself, but that it is of help at times cannot be denied, and in extreme cases of asphyxia it should be used. The number of times that this procedure will be necessary will be very few if more careful watch on the child's condition is kept than is commonly done. Rhythmic traction

on the tongue is another stimulus to respiration and oxygen may be passed into the lungs by a small catheter in the trachea. Other means have been recommended, many are rough and may cause severe injuries to the child. After the baby has begun to breathe the less handling it is subjected to the better. Many babies born in pallid asphyxia breathe for a few hours or days, and then die of an inhalation pneumonia or atelectasis.

After the baby is born and the cord tied and a sterile dressing placed over it, there are four points which the nurse and the physician must watch carefully in every case. First, it must have sufficient air to breathe; second, it must have its body temperature kept up; third, there must be no oozing from the cord; and fourth, the mucus, which is so often present, must not be allowed to block the air passages. These are the four fundamental points which must be insisted on in the management of the newborn baby its first few hours of life.

After the mother has been attended to and made comfortable the nurse proceeds to bathe the baby. If the delivery has been a hard operative one, do not allow the baby to be washed. The amount of handling that is necessary in the giving of the bath does more harm than good. In such cases the baby is simply oiled quickly with warm oil, wrapped up in warm flannel cloth or absorbent cotton and left alone until later when it will have recovered from the shock of the delivery.

The essentials of the first bath are speed, gentleness and warmth. Therefore, everything for the bath and for dressing the baby must be at hand before the nurse sits down to give the baby its bath. Just before the child is given its first bath, it is weighed. It usually is not weighed again until the third day, but from then on for the next month it is weighed at the same time daily. Intelligent oversight of a baby cannot be given unless it is weighed regularly. A nursing baby should gain at least five ounces a week, and if it does not investigation of the cause must be made.

Whether the baby is in all respects normal is determined by the physician immediately after the birth, before the cord is tied and cut. If for any reason its condition was not de-

termined then it should be before the bath is given. For the normal characteristics of a newborn baby I strongly advise that the standard textbooks on pediatrics be thoroughly studied; unless the physician knows what is the normal he may very quickly become confused.

The proper management of the baby in its first few weeks of life is most essential for its own and the family welfare. Regularity stands out as the most important point in the care of the infant. Nothing must be allowed to interfere with its daily routine.

A healthy newborn baby should sleep almost continuously, waking only to nurse. Gradually, as it grows older, its waking periods are longer, but when it is awake it lies in its bed perfectly contented. A baby may cry off and on during the day, but if healthy and well fed, never continuously. The characteristic cry of the spoiled baby is, unfortunately, too commonly heard. Discipline is as essential for the newborn baby as it is for older children.

The question of nursing I shall take up later in this section. After the baby's first tub bath it is not given another until the umbilical cord is off and the umbilicus has been dry for at least forty-eight hours. Each day the baby is given its bath with a face cloth, care being taken not to moisten the cord dressing. The cord dressing is held in place by the flannel band torn of sufficient size to hold the dressing firmly in place. The dressing must be kept dry, but if it becomes wet the original dressing should be taken off and a fresh sterile one applied. If the cord becomes moist, it is best treated with 70% alcohol, and then powdered with subgallate of bismuth. The objection to aristol is that in not a few babies the skin is irritated by it, and also the cost is much greater than the subgallate. The cord drops off in from three to ten days, — the variations are great, and for no obvious reason. Various methods of treating the cord have been suggested from time to time, but none is more satisfactory than simply leaving it alone to dry up. After the cord separates, the umbilicus is powdered with the subgallate of bismuth and in a few days it cicatrizes and soon shows the normal dimpling. Not infrequently the moisture

persists, and this usually is due to a granuloma at the base of the umbilicus. Careful touching of this granuloma with the silver nitrate stick will quickly make the umbilicus heal. Occasionally, in neglected cases, the granuloma is large and pedunculated, and in these cases ligation gives the best results. The umbilicus is carefully wiped out with 70% alcohol, and then a sterile ligature is passed about the base and tied tightly. It should be unnecessary to add that one's hands must be absolutely clean if this is done. If the normal dimpling at the umbilicus is not present watch must be kept up to see that no bulging takes place. If the umbilical ring does not completely close at once, then the umbilicus must be strapped with adhesive plaster. There is no object in waiting. Even with only a small amount of crying a ring, imperfectly closed, will stretch and an umbilical hernia occur. Strapping is not to be done unless the umbilicus is absolutely dry. If it is moist, the band must be continued until it has entirely healed. The strapping should be put on across the belly so that a slight longitudinal furrow is produced. Treated early and efficiently imperfect closures of the umbilical ring always heal solidly and give no trouble. Untreated, the ring steadily enlarges, and an umbilical hernia develops. If strapping does not make the ring close, it must be closed by an operation. An operation, however, is very rarely necessary.

Fresh air is essential to the baby's growth and development. How to obtain this fresh air is a problem only in the winter time, for in the summer with the windows open and houses not heated, there is no difficulty. Sudden chilling of a newborn baby must be avoided in winter or in summer. By the end of a week after birth, the room, if the baby is a winter baby, may have a temperature of 65° F. Gradually, as the baby thrives, the windows may be opened wider and the air in the room by the end of the second month may be down to 50° F. Few babies, however, will stand at this age a temperature below freezing. Each baby must be carefully watched to see how it reacts to cold air. Cold air is not essential; it is fresh air and sunlight that the newborn baby needs. Winter babies need not be taken out of doors, pro-

vided they can be put in a sunny room with the windows opened, as the temperature permits. After the first month winter babies may be put out of doors in the sun for short periods, provided the weather is not extreme, and dust is not flying about. Summer babies may be put out on a sunny piazza by the end of the first week for a short time each day. By the end of the third week they should be outdoors practically all day.

I have already spoken of wiping off the eyelids at birth with a 4% boric acid solution. As soon as possible after birth a drop of argyrol 25% should be dropped into each eye. If argyrol is not used then a 1% solution of silver nitrate may be substituted. Both are efficient preventives of ophthalmia neonatorum and one or the other should be used in every obstetric case. If it is known that a gonorrhea is present in the mother, the silver nitrate solution should be used regularly after thorough irrigation. Should a severe ophthalmia develop, efficient treatment by irrigation and by the silver salts must be at once instituted. Efficient treatment demands skilled nurses working under the supervision of oculists. If such treatment cannot be obtained at home the baby and mother should be sent to the proper hospital. At the present time practically no hospital will take both mother and child when the child has ophthalmia. It is a very serious thing to take a newborn baby off the breast, and therefore, every effort must be made to have efficient treatment carried out at home. Blindness in the newborn from gonorrheral ophthalmia is almost positive proof that someone has badly erred in the treatment. It is a terrible criticism of some members of the medical profession in Massachusetts, that of the number of blind or partially blind babies of whom the Massachusetts Commission of the Blind has record during the past few years, many have been attended by physicians in supposedly good standing.

In the care of the vulva in female babies, cleanliness is essential and in order to remove the smegma secretion some oily preparation should be used. Albolene is satisfactory. Not infrequently a girl baby has a slight bloody discharge from the vagina for a few hours or days. If it is not the

bleeding from hemorrhagic disease of the newborn it is called precocious menstruation. It does not mean, however, that this will appear each month as the child grows up. In male babies the early retraction of the foreskin and careful cleansing of the penis tends to the comfort of the baby when he grows up. Circumcision is seldom needed, but many times the parents request it.

Not infrequently a nurse will report that a diaper has been changed and blood found on it. On investigation it is seen that what is reported as blood is in reality fine reddish granules, the characteristic deposit of urates oftentimes seen in newborn children's urine. This can readily be proved by dipping the stain in hot water when the urates dissolve and disappear while if it were blood it would still remain. When this stain is found boiled water in dram doses should be given the baby between the feedings to help flush the kidneys.

Hemorrhagic disease of the newborn is not an uncommon condition. The cause of this disease is still unknown. Any bleeding that occurs in the newborn child must be regarded as hemorrhagic disease until it is definitely proved not to be. The first sign that any bleeding has taken place may be the vomiting of blood. This blood may be old dark blood, the sign of past bleeding or it may be mixed with fresh bright blood. Blood may first appear in the stools or ecchymotic areas may be found in the skin. The bleeding may be from the umbilicus; bleeding here is oftentimes serious and very difficult to check. The baby may show bleeding from many places or it may have but one severe hemorrhage, as did the baby in Case 28. Multiple bleeding is usually more serious than when one type alone prevails.

Hemorrhagic disease of the newborn is always a serious condition. At the first sign of bleeding a definite prognosis cannot be given, for no one knows how soon the baby may bleed again or how severe the bleeding may be, if it does recur. A careful physical examination will help in the prognosis. The baby's color, its respiration, pulse rate and temperature must be noted; in general, the greater the variations these show from the normal the more serious is the prognosis. The treatment of this disease is first absolute rest and quiet.

The baby should be taken off the breast, except in the very mildest cases, and if feeding is needed breast milk should be given by the bottle or dropper. The body heat must be kept up. The various drugs that have been recommended generally do not do the slightest good. If improvement follows their use the probablity is that the baby would have improved anyway. Subcutaneous injection of thirty cubic centimeters of fresh rabbit serum has given good results in not a few cases, and if it can be obtained it may be given. Human serum, more difficult to obtain, has also been used. With the great advances in the technique by which transfusion of blood may now be done this procedure undoubtedly offers, at the present time, the best hope for the baby. A few years ago this operation, because of the difficult technique, was used only as a last resort, but now it should not be postponed until the child is moribund; but even if moribund, it must, if possible, be done, for brilliant results are already being reported. Every hour the baby lives without recurring bleeding the prognosis improves. Careful nursing in such cases is of prime importance, and each step in bringing the baby back to the usual routine must be carefully considered, but when one is confident that the bleeding has ceased the baby may be treated as any normal baby.

Jaundice of the newborn is of so constant occurrence that one almost has come to look for it in every child. Simple jaundice needs no treatment, for it always clears up of itself very quickly. Calomel must not be given. In another type the jaundice increases, the stools are clay colored, and the child gradually loses ground and dies. This type is due to the congenital obliteration of the bile ducts and admits of no treatment.

Not infrequently the breasts of the newborn babe are enlarged, and sometimes reddened. When the breasts are simply enlarged and full, no treatment should be given save to take especial pains that the breasts are in no way pressed upon. If they become reddened and fluctuate with other signs of abscess formation they must be opened and drained as any other abscess would be. If the breasts are left alone they seldom break down, but if rubbed it is not uncommon

to have an abscess form. The name commonly given this condition is mastitis, but as there is, in the great majority of cases, no rise in temperature, no heat or redness present, the condition is not inflammatory and therefore, rightly, should not be called a mastitis. It becomes a mastitis after the breast is infected, usually from manipulation.

These are the more common diseases which the obstetrician meets in the newborn child. Careful complete physical examinations must be made whenever the child acts differently from what is normal. What the normal is can only be known by careful observations on many children. If a physician has not had the clinical opportunity to examine many normal children, he should avail himself of the real demand that is put upon him to examine at birth, or as soon after as possible, each baby of which he has charge. By constant observation he will quickly learn to appreciate abnormalities.

Resulting from the labor, sometimes in normal deliveries, at other times from hard operative deliveries, a group of injuries occur which the physician must recognize. The commonest in this group are as follows:

The compression of the fetal head resulting in the so-called moulding is so common as to need but passing mention. The one thing to remember is that a moulded head will always return to a normal condition. It never needs manipulation. The only advice that need be given in such cases is that the baby be placed in such a position in its bed that the most prominent part of the skull is down on the mattress in order to favor rapid return to the normal contour of the skull.

After a hard long labor with ruptured membranes, and after operative deliveries the baby may show signs of intracranial hemorrhage. Occasionally this condition may come after a normal labor. The first sign that is usually observed in this condition is loss of the normal pink hue to the baby's skin. It then nurses poorly and not infrequently regurgitates part of its feeding. The temperature is elevated and the pulse rate rapid. Disturbance of respiration with varying degrees of cyanosis is very common. Physical examination shows usually a tense, oftentimes bulging, anterior

fontanelle. There may be twitchings of the extremities, one or all, or paralysis of one side may be marked. A general convulsion is not infrequently seen, and may be the first sign of anything wrong. Bleeding from the nose I have noted in several cases. The finding of blood in the lumbar puncture is positive evidence, but if not found it does not prove that a cerebral hemorrhage is absent.

The prognosis in such cases is grave. If these babies live the blood clot is gradually absorbed. If the blood is entirely absorbed, and no pressure symptoms develop, the child may grow up to be normal. If it is not absorbed various degrees of mental aberrations later become manifest.

The treatment is either to do nothing and hope for resolution, or to operate and turn out the clot or simply to open the skull, incise the dura and drain without any further manipulations. The parents should be told the prognosis with and without operation, and the danger of operation must not be minimized to them. The final decision must be with them, and the surgeon's enthusiasm must not be allowed to carry them away. If the operation is successful, and a few have been, the prognosis is much improved. Is it not better to attempt the cure rather than to have the child turn out feeble-minded?

A caput succedaneum is an edematous swelling present at birth, due to the subcutaneous serous infiltration at the point of the presenting part where there was no pressure, that is, at the os uteri. It varies much in size, it is soft, pliable, and not limited to one bone. It appears only where there is delay in the progress of the labor or where labor is very slow. It is formed after the rupture of the membranes by the interference with the return of the venous blood while the arterial blood is still coming to the part. It may appear at any point of the child's anatomy that is at the os uteri during labor. It requires no treatment, for as soon as the delivery is completed the circulation is unimpeded, and the edema rapidly disappears.

A cephalhematoma, in distinction to the caput, never appears until after birth, generally in from eighteen to thirty-six hours. The cause of this condition is a rupture of a

blood vessel and hemorrhage between the periosteum, and the bone. It is located on one or the other, or on both of the parietal bones, posteriorly. A cephalhematoma is always limited by the edges of the parietal bone on which it starts. It usually increases in size for the first twenty-four hours after its appearance in marked contra-distinction to the caput. It is firmer and more resilient than the caput. The prognosis is absolutely good, and no treatment is demanded. Its absorption is slow. The larger the mass, naturally the longer will be the absorption in taking place. From three to nine weeks is a fair statement of the time needed. In the process of absorption the periosteal ring is readily felt as a hard raised edge, and it is often another month before this edge has completely disappeared. The occurrence of a cephalhematoma cannot be stopped, and in no way can it be blamed to the physician, whether the case be a normal or an operative delivery.

Fractures of the clavicle or of the long bones in difficult versions or breech extractions are not uncommon, and must be treated on recognized surgical principles. Fractures in the newborn knit very quickly and the prognosis is excellent, except in the very rare condition where there is a deficiency of lime salts.

Fractures of the cranial bones may occur spontaneously as the result of excessive moulding or because of damage done by the improper use of forceps. A spoon-shaped depression of the cranial bones occasionally follows a labor in a contracted pelvis, especially in the flat pelvis type. It is due to the pressure of the promontory on the bone, as it is forced by. (Case 22.) If a forceps delivery is undertaken after the biparietal diameter is forced through the brim, and this depression is found, unless the physician explains to the parents the cause of the condition he is unjustly blamed for it. If the depression is slight, it needs no treatment, for it will right itself. If it is marked, pressure at the ends of the depression will sometimes buckle out the hollow. If it does not come out by this simple means it should be raised by a tenaculum passed in through a small trephine opening, or by some other satisfactory means.

Facial paralysis following a forceps delivery is very common. It is caused by pressure of the forceps tip on one or the other of the facial nerves. It always clears up, generally within forty-eight hours, without treatment.

Paralysis of the arm, obstetrical paralysis, may come after any delivery if the head is pulled too strongly, or if the delivery is a breech, if the body is given too great and poorly directed traction. The damage here is due to the stretching or rupture of the nerve roots. The arm hangs limp by the baby's side, with inward rotation of the hand. The prognosis is always guarded, but with intelligent oversight, massage, manipulation and exercises as the baby grows up great improvement may be confidently expected.

Not infrequently, in normal deliveries, though more often in hard long drawn-out labors, a bright red spot is noticed at the end of twenty-four or thirty-six hours in one or both eyes. The condition is one of subconjunctival hemorrhage and is due to a slight hemorrhage following the compression the skull is subjected to during delivery. It never requires treatment, but the parents must be assured that no damage can arise from it.

Very rarely a swelling of varying size is found along the sterno-clido-mastoid muscle. This condition usually is seen after a breech delivery, and is due to the rupture of a small vessel within the sheath of the muscle and its contour is, therefore, usually ovoid with the long axis parallel to the muscle. The name given this condition is a hematoma of the sterno-mastoid muscle. Usually the hemorrhage is absorbed in the course of a few weeks. Very rarely it may give rise to a torticollis and operation may become necessary.

For a consideration of the various malformations that may occur the reader is referred to the standard textbooks, for they are beyond the scope of this book. The only ones that here need to be mentioned are the imperforate anus which calls for surgical interference at once and tongue tie which may be so marked as to prevent the baby from nursing properly. Here again is seen the necessity of making a complete inspection of the baby as soon as is possible; the

usual time, as already mentioned, is after the birth of the child, before the cord has stopped pulsating.

It usually falls to the physician who has delivered the baby to start it on its nursing career. I say nursing advisedly for every baby should, if possible, be nursed. No matter how skillful a physician may be in feeding babies upon modified milk, modified milk is at best but a substitute for maternal nursing. The attitude that not a few physicians take that babies can be brought up as well on the bottle as on the breast must be roundly condemned on every possible occasion. At the present time, even among the very well to do, mothers will nurse their babies if the physician and the nurse take a decided stand for nursing. The nurse can turn the mother from nursing by unguarded remarks, and if the physician too is not enthusiastic it is only a few days before conditions are such that from his point of view weaning must take place at once.

There are certain maternal conditions which must be fulfilled for successful nursing. That all these conditions are present in all cases is not to be supposed, but they are in the majority of cases if the infant does well. The mother must want to nurse her baby in order to nurse successfully. She must place everything secondary to nursing. Regularity is the keynote of a nursing woman's life. She must be healthy, she must lead a sensible life with sufficient amount of exercise in the open, she must have good food that is readily digested. She may eat anything that she can digest; no one kind of food is to be eliminated from her diet because it is thought this or that will upset the baby. A generous, full, well-balanced diet is the best for a nursing woman. As a general rule women with even temperament, those not easily disturbed by household worries and the like, make the best nursing mothers. Not infrequently, however, one sees the neurotic, high-strung girl settle down and nurse her baby successfully. Cares and worries must be removed as far as possible from the nursing woman. Everything in her daily life must be made easy for her.

Her physical condition must be carefully guarded, and if it is found that she is losing weight, below her normal weight,

then the question of weaning the baby must be considered. Some patients put on weight rapidly while nursing, because of the added amount of food they take. Patients of this type one does not worry about, but in the opposite type the decision to nurse or not to nurse is oftentimes a difficult one to make.

A nursing woman must have, at least, one dejection a day; if she is unable to have it naturally she must use a laxative or an enema, or combine these. If the patient can get along without drugs, relying on fruits and laxative foods drugs need not be resorted to, but while she is nursing is not the time for her to attempt to rid herself of the necessity for taking laxatives. What laxative she takes, provided it is not one of the salines, is unimportant. She must not, as is so common, be allowed to take Epsom salts.

Menstruation occurring in a nursing woman is of itself no contra-indication for nursing. Each individual case must be determined by the effect menstruation may have on the milk, and therefore, on the baby. Let it be clearly understood that there may be no effect, and this usually is the case. Therefore, there is no indication for stopping nursing. From normal condition to severe gastro-intestinal upsets in the baby, all gradations may be met. One upset, unless it is very severe, is not sufficient reason to wean the baby. A second menstruation is awaited, and if the baby is again seriously disturbed, nursing will have to be given up. Even if the baby is disturbed for from one to three days during the menstruation and then recovers quickly any ground that has been lost, and makes further satisfactory gain before the menstruation again appears, there is no indication to stop nursing. The first menstruation after parturition may be very profuse, and recognizing this fact we may confidently look forward to the second being more nearly normal. In speaking of menstruation during nursing it may be well to recall to not a few physicians the following facts: Menstruation may be established four weeks after delivery, or it may not appear for weeks after the nursing period is over. No physician can truthfully say what this or that patient will do. What she has done in one nursing

period she very likely may repeat in another, but of that there is no certainty. Menstruation once established, may then recur regularly, as was its custom before pregnancy began or it may show slight irregularities both in time and amount for a few months. Because no menstruation appears the laity and not a few physicians think no pregnancy can occur. Such is far from the truth. Any woman during her child-bearing period, who has intercourse, may become pregnant at any time, whether she is menstruating or not. The process of ovulation goes on whether menstruation is present or not. This is conclusively proved by the well-known fact that women have baby after baby without ever having a menstrual period from the time they are married.

Pregnancy, unfortunately, may occur while the mother is nursing. It is inexcusable, for if a pregnancy does begin nursing must then be given up, and the first baby suffers as a result of the new gestation. The mother in this circumstance does not have time to recuperate. Breeders of animals do not allow gestation to follow so quickly, but the uncontrolled animal, man, does not hesitate to subject his wife to one pregnancy after another without sufficient time for recuperation.

During the minor acute illnesses of the mother nursing should be continued. In not a few cases where the maternal temperature is high, the milk may go entirely or become much diminished in amount. In such cases, where there is insufficient amount of breast milk, supplemented modified milk should be used temporarily. As the temperature drops, if nursing is persisted in, in the majority of cases the milk will return. Patients with tuberculosis, epilepsy, nephritis and malignant disease should not be allowed to nurse. A patient with syphilis, on the other hand, should nurse her own baby, but on no account, another baby.

On the nurse who is with the patient devolves the responsibility of carrying out the physician's wishes in regard to actual nursing. As has been already stated, the first nursing begins after the patient has had a sleep after the labor is completed, some twelve hours later. Regularity the first twenty-four or forty-eight hours is not sought, for there

are many factors which will interfere with this point. If the baby cries a great deal, its restlessness may be quieted by teaspoonfuls of boiled water. If the milk is slow in appearing and the baby becomes very hungry, then a weak modified milk should be given in small amounts. At the beginning of nursing the baby nurses from two to three minutes on each breast, as there, in all probability, is not enough milk in one breast to satisfy the baby. Gradually, as more milk comes into the breast, the regular nursing period becomes established. The question whether to start the baby at once on three or four hour feedings each physician must decide in each individual case. Not a few babies do better on three hour feedings than on two. In the West and in Germany many babies, at once, are put on four hour feedings. It is desirable to get the baby on three hour feedings as quickly as is possible, for it gives the mother greater freedom. The important point to remember is that one must not shift from three to two hour feedings and vice versa without fair trial of the one or the other schedule. In the nursing the baby must not be allowed to get the milk too rapidly, if necessary, it must be taken off the breast every three or four minutes, and made to rest for two or three. By this scheme one may break up the habit of rapid nursing and its consequent evils.

How long to nurse must be settled by the mother and nurse. Some babies will get all the milk they need to carry them along to the next feeding in ten minutes, while others need periods of twenty minutes. If a baby, after twenty minutes of good nursing, does not obtain enough milk to satisfy it, there is never any object in keeping the baby nursing longer. This is sufficient evidence that the supply is inadequate. To be absolutely certain that the supply is insufficient, the baby should be weighed with its clothes on before and after each feeding for one day. By this means one at once knows absolutely what amount of milk the baby obtains.

The signs of a successful nursing are a steady, satisfactory gain in weight; the baby sleeps the greater part of the time, wakes just before nursing time, and as soon as nursing is

over goes to sleep again or lies in its basket contented. There is no vomiting, and no colic; but an occasional gas pain lasting a few moments is not unusual. The baby cries but little except when wet or soiled. The movements are smooth, yellow, without mucus or curds and in number they vary from one to ten. Not infrequently a nursing baby may have green movements with curds and yet gain satisfactorily. No alarm should be felt because of these movements. Gradually the movements drop in number to one a day, and not infrequently a movement every other day is apparently sufficient. Again and again babies have been reported to me as being constipated, and on careful inquiry the constipation consists merely of having a movement every other day. The stool itself is of normal characteristics and the baby shows no discomfort. In such cases, it has never seemed to me advisable to begin giving the baby any medicine to make it have a movement every day, nor has it seemed best to use the soap-stick in order to stimulate the bowels to move. If the baby is uncomfortable and fussy a movement every other day is not sufficient. The condition must be corrected and usually small doses of milk of magnesia will at once straighten out the baby.

The signs of insufficient nursing are the opposite from those just related, but the most characteristic sign is the wakefulness and irritability that the baby shows. The other signs are, however, present.

If the milk supply is insufficient and cannot be increased, then other means for feeding the baby must be sought. Is there any way to increase the milk supply of a nursing woman? A regular life, good and sufficient food, with a fair amount of fluids, together with a good nursing baby is the only way. If under these circumstances the milk is insufficient, the forced feeding of much milk, gruels, cocoa, beer and the like will not make, for any appreciable length of time, much gain in the amount of milk. It is more than likely to upset the mother's digestion.

The method of weaning the baby will many times have to be decided by the physician. The usual way of putting on the breasts a tight compression binder, of giving Epsom salts

in divided doses, and the restriction of the liquids is to-day an unnecessary hardship on the mother. The most satisfactory way is to leave the breasts alone. They will fill up, become tense, engorged and tender for twelve hours and then rapidly go down. If the tenderness is marked an ice-bag to each breast will give immediate relief. In a small number of cases codeia in small doses will materially comfort the patient. In private work, where the quick and complete drying up of the breasts is often not so urgently needed as in hospital work, the breast pump may be used to good advantage. The objection to its use is that the breasts then secrete more milk, and the drying up process is prolonged, and also there is the slight added danger of infection. If the breasts are pendulous, a supporting binder is put on for comfort. The bowels are moved daily, but drastic purging is never necessary; neither is it necessary to limit the amount of fluids ingested. This method of drying up the breasts has proved very satisfactory. I have not, in ten year's work, used any other method, and many patients, who have been subjected to the first mentioned way have gratefully spoken of this latter method. When weaning may be done gradually, by the substitution of one bottle after another, the process is more easily accomplished with practically no discomfort to the mother. From the point of view of the baby gradual weaning is always to be preferred. The above method is just as satisfactory, however, whether the nursing is to be stopped a few days or a few months after it has been established.

If the mother is unable for any sufficient reason to nurse the baby, the problem of bringing the child up on the bottle arises. This book is not the place to discuss the questions of modified feeding, but as the physician, who is present at the birth, must frequently start the baby on a bottle, there are certain fundamental points, which it is not out of place to call to the reader's attention.

First and foremost is the source of the milk supply from which the modified milk is to be made. If possible, the milk should be from a certified herd of cattle; if that is impossible, then at least from a tuberculin tested herd kept under clean

conditions. The herd should be a mixed one of Guernseys, Holsteins, and Ayrshires, in such proportion that the fat content of the milk will be constant in the neighborhood of 4%. The fresher the milk the better for the baby. Given a good clean milk, the necessity for safeguarding its purity must be insisted upon when it comes into the patient's house. The method of making up modified milk I shall not go into here. The one essential point for the physician to remember is that a newborn babe must be put on a weak formula and that a low fat content is of prime importance. Remember to start with a weak formula and give small amounts. It is much better to underfeed a bottle baby than to overfeed. The damage done from overfeeding, especially from a high fat content, is very serious, and lasts many months. The details of modified milk must be mastered, and the reader is referred to the standard textbooks of pediatrics for this knowledge.

Comparatively few physicians appreciate the importance of guarding the newborn babe from being chilled. One single serious chilling may kill a normal full-term child. This being true in regard to the full-term child, it is many more times important that the premature baby be guarded in every possible way. When a physician is called to a premature delivery, one of the first conditions which he must see is complied with is that the room in which the delivery is to take place is warm. A temperature of 75–80° is necessary. Of course, when the labor is but two weeks premature, there is no need to have the room as warm, but if the labor is two months premature then the room must be as noted. As soon as possible, the baby must be surrounded by warmed coverings. A premature baby must never be done up in materials that have not previously been warmed. The two fundamental points in the management of the premature baby are maintaining its body temperature and obtaining breast milk for it. In order to carry out successfully the first point a day and a night nurse are necessary. Careful, constant vigil is essential. A premature baby must not be washed at birth; it is quickly oiled with warm oil, not dressed, but surrounded by absorbent cotton, and heaters are put

about it. The pediatricians in whom I have confidence do not advise the use of incubators for premature children, and as I have seen many children thrive without the incubator, and some die in the incubator, I have never attempted to use one in private practice. Definite rules for the management of every premature baby cannot here be laid down; only the fundamentals will be attempted and variations must be expected in each case.

The room in which the baby is, must be quiet, darkened and have a temperature of about 80°. The basket in which the baby lies must be padded to avoid draughts, and the thermometer placed in the basket near the baby should record 90–95°. The baby's temperature should be taken every four hours and heat added or taken away depending on whether the child's temperature is below or above normal. Slight variations in the temperature, the first few days, in a markedly premature baby are not unexpected, but gradually the temperature comes to be more steady. The nurses must be instructed to handle the baby as little as possible. Visitors should be kept out of the baby's room. Human milk, if possible, should be obtained for the baby. If there is no milk in the mother's breast, a wetnurse must be obtained if the child is to have every possible chance to live. That excellent plan — the Wetnurse Directory — which has recently been established in Boston gives the Boston physicians the opportunity of obtaining breast milk that but few parts of the country have. If a wetnurse is to be used her physical soundness and the absence of syphilis, as shown by the Wasserman reaction, and the absence of gonorrhea, must be guaranteed by the Directory, or if not obtained there, must be by the physician who is in charge of the case. The more premature the baby the more essential is it that breast milk be obtained for it. It is unwise to attempt to nurse many premature children, for the exertion of nursing with the necessary handling that nursing entails tires these children too much. Feeding by a dropper or by means of a Breck feeder is much more advisable. In the first few days of a premature baby's life it may be necessary to dilute the mother's milk. There can be no set rules for the manage-

ment of such babies. The underlying rules of giving small amounts of breast milk often must be remembered. The physician carefully feels his way along remembering always that the baby is premature, and all changes must be made slowly and carefully. Gradually, as the baby grows older, the room temperature and the basket temperature are reduced. The food is increased in amount, and the feeding intervals lengthened. One nursing a day is attempted, and if it goes well then more follow. Each change is an experiment, and one must be ever ready to go back or forward according to the present indications. The successful rearing of a markedly premature baby is a triumph, but the physician must not gather to himself the honor. The nurses in charge of such an infant and the mother who does as she is advised, in order to give the baby breast milk, deserve much more credit than does the physician. The physician outlines the care and the efficient nurse carries out the minutest detail as ordered. Without team work satisfactory results will not be obtained.

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